

# Spreadsheet File Descriptions

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This document helps you understand the files decoded from  
your data.

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## Introduction

Data from Wildlife Computers tags is presented in spreadsheet (CSV) files. Since there are many different categories of data reported, there are likewise many distinct spreadsheet files generated with different data and diagnostic information.

When data is downloaded, you are given the opportunity to assign a name to the file. A suffix is automatically added to the name you supply to help you identify the contents of each spreadsheet. For instance, if your tag sends status messages, a spreadsheet whose name ends with **-Status.csv** will be available.

Following are brief explanations of each spreadsheet and descriptions of the spreadsheet columns and rows. Wildlife Computers intends to preserve the column names, ordering, and meanings as product lines evolve. However, some changes are inevitable. If you are writing software to interpret these files, Wildlife Computers strongly encourages you to minimize your dependence on column order and to localize your use of column names.

## Common Elements

Some column headings are common to several of the CSV files. This section describes those common elements.

An empty cell in a spreadsheet means the data element is unavailable. A specific value in a cell means the item was decoded or otherwise deduced.

Note that for 2000 m instruments, if the setup parameters were not provided when the data were decoded, depth values may need to be doubled. For tags that are programmed in the portal or archival .wch files uploaded to the portal, the setup parameters are automatically accessed, and there is no need to double depth readings for 2000 m tags.

Column	Description
DeployID	Friendly name given to the tag by the user. If no specific friendly name is given, this is the PTT id.
DepthSensor	Indicates the resolution of the depth sensor. Typical values are 0.1m, 0.5m, and 1.0m.
Source	Indicates where the data came from, or how it was generated. Values include:  <b>Argos</b> or <b>Transmission</b> - Information was generated on the tag and transmitted through Argos. <b>WCH</b> - Information was interpreted from the .WCH file. <b>DAP</b> - Information was generated by Wildlife Computers Data Analysis Program.
PTT	Argos Platform Transmitter Terminal identifier, which is a unique number identifying your instrument.



<b>Instr</b>	Wildlife Computers instrument family.
<b>Count</b>	Total number of times a particular data item was received, verified, and successfully decoded.
<b>Date</b>	<p>The date and time associated with the row. In the case of histograms, this is the start of the histogram period. Alternatively, it is the time-of-reception for status messages. Unless otherwise stated, Date is the time as known on the tag and reported by the tag's real-time clock. It is not corrected for clock error or drift.</p> <p>NOTE: Experimentation reveals that opening a CSV file with Microsoft Excel and saving the file as a CSV will often truncate the seconds from a time field! This is an important concern with some files such as LightLoc and Fast-GPS. Files such as these have Date separated into 'Day' and 'Time' fields which do not seem to suffer from the problem.</p>
<b>Day</b>	The month, day, and year part of the time associated with a row.
<b>Time</b>	The hours, minutes, and seconds part of the time associated with a row.
<b>Time Offset</b>	<p>The number of seconds of error in the Date field.</p> <p>Time Offset + Date = Real World Time</p>
<b>Satellite</b>	Abbreviation for the name of the Argos satellite that received the message.
<b>Latitude</b>	Latitude calculated by Argos for the satellite pass of interest.
<b>Longitude</b>	Longitude calculated by Argos for the satellite pass of interest.
<b>LocationQuality</b>	Class of location generated by Argos for the satellite pass containing this message (see below).

When Argos determines a location, an estimated error is calculated as described in the Argos User's Manual (<http://www.argos-system.org>). The following are the values delivered by Argos which appear in the LocationQuality section of several spreadsheet files:

Class	Estimated error	Number of messages received per satellite pass
3	<250m	Four messages or more
2	250m < < 500m	Four messages or more
1	500m < < 1500m	Four messages or more
0	>1500m	Four messages or more
A	No accuracy estimation	Three messages
B	No accuracy estimation	Two messages
Z	Invalid location (available only for Service Plus/Auxiliary Location Processing)	

## -All.csv

This file includes all un-decoded messages received from Argos. This is like the RawArgos.csv.

Column	Description
<b>DeployID</b>	Friendly name given to the tag by the user. If no specific friendly name is given, this is the PTT ID.
<b>Platform ID No.</b>	Argos Platform Transmitter Terminal identifier, which is a unique number identifying your instrument.
<b>Prg No.</b>	The Argos Program number that the PTT id belongs to.
<b>Latitude</b>	Latitude of tag.
<b>Longitude</b>	Longitude of tag.
<b>Loc. quality</b>	Class of location generated by Argos for the satellite pass containing this message.
<b>Loc. date</b>	Date and time of location.
<b>Loc. type</b>	Type of location: Argos.
<b>Altitude</b>	Altitude of location calculated by Argos. Not applicable to marine deployments.

<b>Pass</b>	Number of satellite passes.
<b>Sat.</b>	This abbreviation represents the satellite name.
<b>Mote Id</b>	If this message was received by a WC Mote, the name of the Mote will be here.
<b>Frequency</b>	Measured frequency of the Argos pass.
<b>Msg Date</b>	Date and time that Argos received the message.
<b>Comp.</b>	Number of duplicate messages in this satellite pass.
<b>Msg</b>	Number of messages received in this satellite pass.
<b>&gt; - 120 DB</b>	Number of messages with a signal strength > -120 dB.
<b>Best level</b>	dB level of best message in the pass.
<b>Delta freq.</b>	Same as 'Frequency.'
<b>Long. 1</b>	Longitude of tag (same as 'Longitude').
<b>Lat. sol. 1</b>	Latitude of tag (same as 'Latitude').
<b>Long. 2</b>	Argos DI messages contain a second longitude value since their location algorithm can generate two positions. This is the second longitude value.
<b>Lat. sol. 2</b>	Argos DI messages contain a second latitude value since their location algorithm can generate two positions. This is the second latitude value.
<b>Loc. idx</b>	Location quality index (0...99).
<b>Nopc</b>	Number of checks.
<b>Error radius</b>	If the position is best represented as a circle, this field gives the radius of that circle in meters.
<b>Semi-major axis</b>	If the estimated position error is best expressed as an ellipse, this field gives the length in meters of the semi-major elliptical axis (one half of the major axis).

<b>Semi-minor axis</b>	If the estimated position error is best expressed as an ellipse, this field gives the length in meters of the semi-minor elliptical axis (one half of the minor axis).
<b>Ellipse orientation</b>	The angle in degrees of the ellipse from true north, proceeding clockwise (0 to 360). A blank field represents 0 degrees.
<b>GDOP</b>	Geometric Dilution of Precision.
<b>SENSOR #01....</b>	Raw message data.

## -Archive.csv

This file is available when a tag is recovered and the .wch file decoded. The columns that appear in the file contain sensor-time-series and event data and differ depending upon the type of tag.

## -Argos.csv

Each row in this spreadsheet represents a single Argos satellite pass. Note: that this spreadsheet does NOT contain data from individual received messages.

Column	Description
<b>DeployID</b>	Friendly name given to the tag by the user. If no specific friendly name is given, this is the PTT ID.
<b>PTT</b>	Argos Platform Transmitter Terminal identifier, which is a unique number identifying your instrument.
<b>Instr</b>	Wildlife Computers instrument family.
<b>RecordType</b>	Type of Argos record, either DS or DI.
<b>MsgCount</b>	The number of messages received from the PTT for the satellite pass.
<b>Duplicates</b>	The number of identical messages received for the satellite pass. An empty cell means no duplicate messages were received for this pass. A value of '1' means the original plus one duplicate was received, '2' means the original plus two duplicates.
<b>Corrupt</b>	The number of corrupt messages in the given satellite pass.

<b>AvgInterval</b>	The average inter-message interval in seconds of all received messages for the given satellite pass.
<b>MinInterval</b>	The minimum inter-message interval in seconds of all received messages for the given satellite pass.
<b>Date</b>	The month, day, year, and time associated with a row.
<b>Satellite</b>	The name of the Argos satellite that received the message.
<b>LocationQuality</b>	Class of location generated by Argos for the satellite pass containing this message.
<b>Latitude</b>	Latitude calculated by Argos for the satellite pass of interest.
<b>Longitude</b>	Longitude calculated by Argos for the satellite pass of interest.
<b>Latitude2</b>	Argos DI messages contain a second latitude value since their location algorithm can generate two positions. This is the second latitude value.
<b>Longitude2</b>	Argos DI messages contain a second longitude value since their location algorithm can generate two positions. This is the second longitude value.
<b>IQ</b>	Argos-supplied value which gives transmitter frequency information.
<b>Duration</b>	Time elapsed between the first and last message received for the satellite pass.
<b>Frequency</b>	Calculated frequency of the transmitter.
<b>Power</b>	The best received signal strength (dB) during the satellite.

## -Behavior.csv

Each row of this spreadsheet represents one type of behavior reported by the instrument.

Column	Description
<b>DeployID</b>	Friendly name given to the tag by the user. If no specific friendly name is given, this is the PTT ID.





<b>PTT</b>	Argos Platform Transmitter Terminal identifier, which is a unique number identifying your instrument.
<b>DepthSensor</b>	Indicates the resolution of the depth sensor. Typical values are 0.1m, 0.5, and 1.0m. The value in this column is blank if the gain was unavailable - in this case a 0.5-meter resolution is assumed.
<b>Source</b>	Indicates where the data came from, or how it was generated.
<b>Instr</b>	Wildlife Computers instrument family.
<b>Count</b>	Total number of times this data item was received, verified, and successfully decoded.
<b>Start</b>	Timestamp when the behavior item began.
<b>End</b>	Timestamp when the behavior item ended.
<b>What</b>	Kind of element - Surface, Haulout, Dive, Message, or Unrecognized.
<b>Number</b>	The number of times the behavior element described by the following Shape, Depth, and Duration columns occurred back-to-back.
<b>Shape</b>	If the behavior is a dive, this is the shape of the dive determined by the tag (see below).
<b>DepthMin</b>	The maximum dive Depth is between DepthMin and DepthMax meters. These columns indicate the range of possible values (resolution) of the dive depth. The resolution increases for deeper depths.
<b>DepthMax</b>	See DepthMin column description.
<b>DurationMin</b>	The duration of the behavior is between DurationMin and DurationMax seconds. These columns indicate the range of possible values (resolution) of the duration of the dive, surface period, or all elements in an individual message (see What column description). The resolution is typically 2 seconds for dives and surface periods and increases with longer durations. The time resolution of the total message is the sum of the resolutions of the individual elements.
<b>DurationMax</b>	See DurationMin column description.
<b>Shallow</b>	In between dives, this is the portion of the surface time in seconds spent ABOVE the threshold to determine the start and end of a dive. If wet/dry is used as the threshold, this is the time spent dry.
<b>Deep</b>	In between dives, this is the portion of the surface time in seconds spent BELOW the threshold to determine start and end of a dive. If wet/dry is used as the threshold, this is the time spent wet.

Tags that perform behavior processing classify dives into one of three simple shapes (square, V, and U) by assuming the bottom of a dive is any depth reading  $\geq 80\%$  of the maximum reading observed for



the dive. If the total duration for the dive is **T** and the total time between the first bottom reading and the last bottom reading is **B**:

Shape	Bottom Time
Square	$B > 50\% T$
V	$B \leq 20\% T$
U	$20\% T < B \leq 50\% T$

## -Corrupt.csv

Each row is a message whose contents was rejected by DAP. Most messages transmitted by Wildlife Computers' tags incorporate features allowing detection of data corruption. There are many ways perfectly formed messages can be corrupted on their journey to and from an Argos satellite, including:

- Salt water may have splashed over the tag's antenna during the transmission.
- Another message may have been simultaneously transmitted by a different platform, and the two messages may have corrupted each other.
- Atmospheric conditions may have led to the corruption of the message.

An abnormally high number of corrupt messages could indicate the type of tag was misidentified by DAP. For instance, if DAP believes a tag is an MK10 but it is a MiniPAT all the tag's status messages will be reported corrupt because MiniPAT and Mk10 encode status messages differently. Such situations will normally reconcile themselves if enough messages are received.

Column	Description
<b>DeployID</b>	Friendly name given to the tag by the user. If no specific friendly name is given, this is the PTT ID.
<b>PTT</b>	Argos Platform Transmitter Terminal identifier, which is a unique number identifying your instrument.
<b>Instr</b>	Wildlife Computers instrument family.
<b>Date</b>	The time and date when Argos received the message.
<b>Duplicates</b>	The number of identical messages received for the satellite pass. An empty cell means no duplicate messages were received for this pass. A value of '1' means the original plus one duplicate was received, '2' means the original plus two duplicates.
<b>Satellite</b>	The name of the Argos satellite that received the message.



<b>LocationQuality</b>	Class of location generated by Argos for the satellite pass containing this message.
<b>Latitude</b>	Latitude portion of the location generated by Argos.
<b>Longitude</b>	Longitude portion of the location generated by Argos.
<b>Reason</b>	A terse explanation of why the message was rejected. A reason such as "CRC" or "Checksum" means mathematical integrity checks indicate a corrupt message.
<b>Possible Timestamp</b>	If the message at all resembled a valid WC message, this is the timestamp the data could have had. It is important to realize we are dealing with a corrupt message, so this value may be nonsense.
<b>Possible Type</b>	If the message at all resembled a valid WC message, this is the kind of data the message might have had. It is important to realize we are dealing with a corrupt message, so this value is nonsense.
<b>Byte zero, Byte 1....</b>	These columns contain the data bytes, in decimal, as received from Argos. One or more of these data bytes are corrupted.

## -CTD.csv

This spreadsheet provides the depth, temperature, and salinity profile data from SCOUT-CTD tags.

Column	Description
<b>DeployID</b>	Friendly name given to the tag by the user. If no specific friendly name is given, this is the PTT ID.
<b>PTT</b>	Argos Platform Transmitter Terminal identifier, which is a unique number identifying your instrument.
<b>Source</b>	Indicates where the data came from, or how it was generated.
<b>Instr</b>	Wildlife Computers instrument family.
<b>Date</b>	The time and date associated with the profile data.
<b>Time Offset</b>	Calculated difference between the tag's clock and the time reported by Argos. Adding this value to the "Date" value will give the correct time stamp for the profile data.
<b>Count</b>	Total number of times this data item was received, verified, and successfully decoded.
<b>LocationQuality</b>	Historical. No longer applicable.
<b>Latitude</b>	Historical. No longer applicable.
<b>Longitude</b>	Historical. No longer applicable.
<b>Id</b>	Profile number.



<b>MinDepth</b>	The minimum depth possible given the resolution of the data.
<b>Depth</b>	The Depth level that is reported.
<b>MaxDepth</b>	The maximum depth possible given the resolution of the data.
<b>MinTemperature</b>	The minimum temperature possible at the reported depth level, given the resolution of the data.
<b>Temperature</b>	Mid-point value of the temperature range at the reported depth level.
<b>MaxTemperature</b>	The maximum temperature possible at the reported depth level, given the resolution of the data.
<b>MinPSU</b>	The minimum practical salinity unit (PSU) possible at the reported depth level, given the resolution of the data.
<b>PSU</b>	Mid-point value of the practical salinity unit (PSU) range at the reported depth level.
<b>MaxPSU</b>	The maximum practical salinity unit (PSU) possible at the reported depth level, given the resolution of the data.

## -DailyData.csv

This spreadsheet is generated if the decoded data contain information regarding the broad daily readings of the tag.

<b>Column</b>	<b>Description</b>
<b>PTT</b>	Argos Platform Transmitter Terminal identifier, which is a unique number identifying your instrument.
<b>Instr</b>	Wildlife Computers instrument family.
<b>Date</b>	The date of the daily data.
<b>MinTemp</b>	The minimum temperature observed during the period.
<b>MaxTemp</b>	The maximum temperature observed during the period.
<b>MinDepth</b>	The minimum depth observed during the period.
<b>MaxDepth</b>	The maximum depth observed during the period.
<b>MaxDeltaTilt</b>	The difference between the minimum observed tilt for the day and the maximum observed tilt for the day.

<b>AvgMinMaxTilt</b>	Historical. Replaced by MaxDeltaTilt.
<b>DeltaLight</b>	The difference between the minimum and maximum light level observed during the previous day.

## -DDN.csv

Each line in this spreadsheet classifies one hour of behavior as dry, deep, or neither dry nor deep. The definitions of dry and deep are specified when the tag is configured.

Column	Description
<b>DeployID</b>	Friendly name given to the tag by the user. If no specific friendly name is given, this is the PTT ID.
<b>PTT</b>	Argos Platform Transmitter Terminal identifier, which is a unique number identifying your instrument.
<b>Instr</b>	Wildlife Computers instrument family.
<b>Count</b>	Total number of times this data item was received, verified, and successfully decoded.
<b>Date</b>	The date and time of the start of the DDN timeline.
<b>Disposition</b>	Dry, deep or neither.
<b>Code</b>	Number indicating whether it is Dry (0), deep (1), or neither (2).

## -DivePDT.csv

This spreadsheet is generated if the decoded data contain Deepest-Dive Temperature Depth profiles. These temperature profiles are created from data collected during the deepest dive within the histogram summary period.

Column	Description
<b>BadTherm</b>	1 if the tag reported a broken external thermistor during the summary period, 0 if the tag did not report a broken thermistor, and blank if the tag does not report the thermistor condition.
<b>Depth</b>	The depth at which the associated temperature reading was measured. Associated with the maximum number of non-zero bins received in any of the current HistType kind of messages.



<b>TemperatureDelta</b>	The temperature measured at Depth and encoded as a delta from the base temperature. The actual temperature is this value added to the base temperature.
<b>Temperature</b>	The temperature measured at Depth. It is the base temperature plus the Temperature Delta. The tag does not transmit the base temperature and must be obtained from the tag report file. If the setting is not known, this column will be blank.

## -ECDHistos.csv

This spreadsheet is generated if the tag reports distributions as **E**mpirical **C**umulative **D**istributions representing the depths, temperatures, or oxygen levels above which animals spend different amounts of time. At the end of each summarization period, the tag examines the sensor readings and constructs a message containing a subset of the sampled values. Depending upon the tag type, not all columns will appear in the spreadsheet. See the [SPLASH](#) and [microPAT](#) user guides for more details about this data product.

Column	Description
<b>DeployID</b>	Friendly name given to the tag by the user. If no specific friendly name is given, this is the PTT ID.
<b>PTT</b>	Argos Platform Transmitter Terminal identifier, which is a unique number identifying your instrument.
<b>Source</b>	Indicates where the data came from, or how it was generated.
<b>Instr</b>	Wildlife Computers instrument family.
<b>Start</b>	Date and Time when the summary period began.
<b>End</b>	Date and Time when the summary period ended.
<b>Kind</b>	The kind of cumulative distribution.
<b>Type</b>	The type of depth distribution or behavior state for that line of data. Values include 'deep,' 'shallow,' 'dry,' 'coasted,' 'interpolated,' and 'observed.'
<b>MinDepth</b>	The minimum depth observed during the period.
<b>PercentTime</b>	The percentage of time spent in that distribution or behavior state for the given summary period. For microPAT ECDs, each of the distributions will represent 100% of the summary period time.
<b>MinSec</b>	The minimum number of seconds spent in that distribution or behavior state given the resolution of the data.



<b>MaxSec</b>	The maximum number of seconds spent in that distribution or behavior state given the resolution of the data.
<b>MaxDives</b>	The maximum number of qualified dives counted during the summary period. Dives are only counted when they exceed a defined depth, or duration, or both. The dive count is repeated for "shallow" and "deep" ECD types, if time was spent in both thresholds, but does not represent the number of dives occurring in each depth threshold.
<b>Percent_##</b>	The ##th percentile depth, temperature, or oxygen levels. For example, using depth, this is the depth above which the animal spent some percent of its time for the period represented by that line of data. "##" is the percent and could be 20, 25, 33, 40, 50, 60, 66, or 80 depending upon the tag type.
<b>Percent_100</b>	The depth, temperature, or oxygen level above which the animal spends all its time during the period represented by that line of data. For microPAT and SPLASH, it equals the max depth for that distribution type.

## -FastGPS.csv and -X-FastGPS.csv

These spreadsheets will be generated if the decoded data contain Fast-GPS snapshot information. They have the same form but will either contain the raw GPS snapshot information (in -FastGPS.csv), or the processed location estimates (in -X-FastGPS.csv). Data needs to be processed using Wildlife Computers GPS Solver on the Portal before locations will be shown in this spreadsheet. Each row in the spreadsheet represents an individual snapshot and subsequent location estimate. Each time the data are processed with GPS Solver, the number (X) before -FastGPS.csv will increment so users can keep track of the different processing runs.

Column	Description
<b>Name</b>	Friendly name given to the tag by the user. If no specific friendly name is given, this is the PTT ID.
<b>Day</b>	The date of the GPS snapshot.
<b>Time</b>	The time of the GPS snapshot.
<b>Count</b>	Total number of times this data item was received, verified, and successfully decoded.
<b>Time Offset</b>	Calculated difference between the tag's clock and the time reported by Argos. Adding this value to the value in the 'RTC' column should yield the value in the 'Received' column.
<b>LocNumber</b>	The tag increments a counter each time it successfully gathers satellite data. This is the value of that counter when this row's snapshot was taken.

<b>Failures</b>	The tag increments a counter each time it attempts to gather satellite data but fails to see enough satellites. This is the current value of that counter when the current snapshot was taken.
<b>Hauled Out</b>	Contains '1' if the tag was hauled-out at the time of the snapshot, '0' if not hauled out, and is blank if the tag does not support haul-out or if the original message did not contain haulout information.
<b>Satellites</b>	The number of GPS satellites contained in a snapshot. A minimum of four satellites is required to successfully generate a location solution. More satellites tend to have less uncertainty.
<b>InitLat</b>	Latitude used as the seed to solve the location in this record.
<b>InitLon</b>	Longitude used as the seed to solve the location in this record.
<b>InitTime</b>	Time used as the seed time to solve the location in this record.
<b>InitType</b>	Source of the seed (Init) location.
<b>Latitude</b>	The latitude component of the position of this snapshot. This field is empty when the data is decoded from an instrument; it is filled in when a location solution is generated.
<b>Longitude</b>	The longitude component of the position of this snapshot. This field is empty when the data is decoded from an instrument; it is filled in when a location solution is generated.
<b>Height</b>	The altitude of the position in meters above the WCS84 Geoid model (not sea level). This value has a large margin of error and should be ignored.
<b>Bad Sats</b>	The number of bad satellites which were discarded when arriving at the solution. Satellites may be discarded because the combination of the observation time and the physical position of the satellite are incompatible (i.e. the satellite should have been on the other side of the earth). Or the satellite could have been out of service. If many rows of the spreadsheet have non-zero 'Bad Sats' values, the timestamp of the observation or the starting location of the snapshot may be in error.
<b>50CI</b>	50% confidence interval (in meters) for the estimated location. This is only applicable for locations with 5+ satellites used in the location solution.
<b>95CI</b>	95% confidence interval (in meters) for the estimated location. This is only applicable for locations with 5+ satellites used in the location solution.
<b>Residual</b>	A quality indicator for a GPS position. Large residuals or large time errors relative to other locations can indicate a high degree of uncertainty in the location.
<b>Time Error</b>	An estimate of the error of the clock on board the instrument after the value in the Time Offset column has been applied. Solver uses the snapshot time and downloaded RINEX files to determine the satellite geometry when the snapshot was taken. Presuming the Date and Time Offset inputs are correct, this value should remain small and smoothly change over time.



<b>TWIC Power</b>	An optional value indicating how many mAH have been consumed by the instrument's Argos transmitter since the unit had a battery replacement.
<b>Fastloc Power</b>	An optional value indicating how many mAH have been consumed by the instrument's Fast-GPS circuitry since the unit had a battery replacement.
<b>Noise</b>	Snapshot data used by Solver.
<b>Range Bits</b>	Snapshot data used by Solver.
<b>Id</b>	Snapshot data used by Solver.
<b>Range</b>	Snapshot data used by Solver.
<b>Signal</b>	Snapshot data used by Solver.
<b>Doppler</b>	Snapshot data used by Solver.
<b>CNR</b>	Snapshot data used by Solver.

## **-X-GPE3.csv**

This file is produced if light level data has been processed in GPE3 where X is the number of the GPE3 run. The top of the file contains details about the model run.

<b>Column</b>	<b>Description</b>
<b>DeployID</b>	Friendly name given to the tag by the user. If no specific friendly name is given, this is the PTT ID.
<b>PTT</b>	Argos Platform Transmitter Terminal identifier, which is a unique number identifying your instrument.
<b>Date</b>	The date and time of the most likely location.
<b>Most Likely Latitude</b>	The latitude portion of the most likely location at that time, represented as decimal latitude.
<b>Most Likely Longitude</b>	The longitude portion of the most likely location at that time, represented as decimal longitude.
<b>Observation Type</b>	The observation type that was made at that time, if applicable. The model can produce output for times when there are no observations.
<b>Observed SST</b>	The observed SST reading if the observation type is SST.

<b>Satellite SST</b>	The reference SST reading at the most likely location is also reported.
<b>Observed Depth</b>	The observed depth at the time of the SST or twilight reading.
<b>Bathymetry Depth</b>	The bathymetry depth at the most likely location.
<b>Observation LL (MSS)</b>	Historical. No longer applicable.
<b>Observation Score</b>	A relative score is reported for each observation. A higher observation score means that the observation data fit the estimated locations well, and a lower score means the observation data did not fit the estimated locations very well.
<b>Sunrise</b>	Theoretical time of geometric sunrise presented in UTC for the most likely location.
<b>Sunset</b>	Theoretical time of geometric sunset presented in UTC for the most likely location.

## -X-GPE3.nc

While not a spreadsheet per se, this file is produced if light level data has been processed in GPE3 where X is the number of the GPE3 run. The file contains variables in a netCDF format related to the likelihood surfaces output by the GPE3 model.

<b>Variable</b>	<b>Description</b>
<b>Latitudes</b>	The reference latitudes in 0.25-degree steps comprising the extent of the state-space.
<b>Longitudes</b>	The reference longitudes in 0.25-degree steps comprising the extent of the state-space.
<b>Residency Distributions by Month</b>	For each month, the twelve_hour_likelihood surfaces are averaged together grid by grid. The resulting value for every cell in the state-space is the proportion of time that the animal spent in each cell during that month.
<b>Monthly Timestamps</b>	The month associated with the residency distributions by month reported in seconds since 1970-1-1.
<b>Observation Scores</b>	The model score for each observation. The model can produce output for times when there are no observations. Scores for those times show up as 'NaN.'
<b>Observation Timestamps</b>	The date/time associated with the observations reported in seconds since 1970-1-1.
<b>Observation Types</b>	The type of observation. The model can produce output for times when there are no observations. Types for those times show up as 'None.'
<b>Twelve Hour Likelihoods</b>	This is a set of surfaces representing likelihood surfaces at noon and midnight for each day of the deployment. The likelihood surfaces are normalized to a value of 1 to represent the probability of occurrence in each cell of the state-space.

**Twelve Hour  
Timestamps**

The date/time associated with the twelve-hour likelihoods reported in seconds since 1970-1-1.



## -HaulOut.csv

Some tags allow the transmission of haul out information through Argos. Each line in this spreadsheet describes one haulout.

Column	Description
<b>DeployID</b>	Friendly name given to the tag by the user. If no specific friendly name is given, this is the PTT ID.
<b>PTT</b>	Argos Platform Transmitter Terminal identifier, which is a unique number identifying your instrument.
<b>Instr</b>	Wildlife Computers instrument family.
<b>ID</b>	Every haul out is assigned a numeric identifier by the tag. SPLASH10 tags send the least significant bits of this identifier through Argos to help you detect missing haulout information; this number should cycle from 0-15 and repeat.
<b>Start</b>	The tag's real-time clock value after the first dry minute of the start of the haulout was detected.
<b>End</b>	The tag's real-time clock value after the first wet minute ending the haulout was detected.
<b>Duration</b>	Historical. No longer applicable.
<b>LocationQuality</b>	Historical. No longer applicable.
<b>Latitude</b>	Historical. No longer applicable.
<b>Longitude</b>	Historical. No longer applicable.
<b>DurationMinMinutes</b>	The duration of the haulout is between DurationMinMinutes and DurationMaxMinutes, to a maximum of approximately 2 days and 18 hours.
<b>DurationMaxMinutes</b>	The duration of the haulout is between DurationMinMinutes and DurationMaxMinutes, to a maximum of approximately 2 days and 18 hours.

## -Histos.csv

This spreadsheet accumulates histogram data including Time at Depth (TAD), Time at Temperature (TAT), Dive Durations, Dive Depths, Percent Timelines, and Twenty Minute Timelines.

Column	Description
<b>DeployID</b>	Friendly name given to the tag by the user. If no specific friendly name is given, this is the PTT ID.
<b>PTT</b>	Argos Platform Transmitter Terminal identifier, which is a unique number identifying your instrument.
<b>DepthSensor</b>	Indicates the resolution of the depth sensor. Typical values are 0.1m, 0.5, and 1.0m. The value in this column is blank if the gain was unavailable - in this case a 0.5-meter resolution is assumed.
<b>Source</b>	Indicates where the data came from, or how it was generated.
<b>Instr</b>	Wildlife Computers instrument family.
<b>HistType</b>	The type of histogram data in the current row with values such as TAT, TAD, Percent, TwentyMinTimeline, DiveDuration, DiveMaxDepth.
<b>Date</b>	The date and time the histogram period started.
<b>Time Offset</b>	Calculated difference between the tag's clock and the time reported by Argos.
<b>Count</b>	Total number of times this data item was received, verified, and successfully decoded.
<b>BadTherm</b>	1 if the tag reported a broken external thermistor during the summary period, 0 if the tag did not report a broken thermistor, and blank if the tag does not report the thermistor condition.
<b>LocationQuality</b>	Historical. No longer applicable.
<b>Latitude</b>	Historical. No longer applicable.
<b>Longitude</b>	Historical. No longer applicable.
<b>NumBins</b>	The number of non-zero bins received in any of the current HistType messages.
<b>Sum</b>	The total of the data in each bin on the current row.
<b>Bin1...</b>	Tag data for the corresponding histogram bin.

## -Labels.csv

This is a list of the user created labels that were applied to this tag in the Data Portal.

## -Lightloc.csv

This spreadsheet consolidates the data used by Wildlife Computers GPE software.

Column	Description
Index	Counter that increments each time a light curve is identified.
DeployID	Friendly name given to the tag by the user. If no specific friendly name is given, this is the PTT ID.
PTT	Argos Platform Transmitter Terminal identifier, which is a unique number identifying your instrument.
DepthSensor	Indicates the resolution of the depth sensor. Typical values are 0.1, 0.5, and 1.0 m. The value in this column is blank if the gain was unavailable - in this case a 0.5-meter resolution is assumed.
Source	Indicates where the data came from, or how it was generated.
Instr	Wildlife Computers instrument family.
Day	The day the first reading of the light curve took place.
Time	The time the first reading of the light curve took place.
Time Offset	Calculated difference between the tag's clock and the time reported by Argos.
Count	Total number of times this data item was received, verified, and successfully decoded.
InitLocQ	The location quality of InitLat and InitLon.
InitTime	The time when InitLat and InitLon were experienced by the tag.
InitLat	Most appropriate available latitude within 24 hours of 'Day' and 'Time.'
InitLon	Most appropriate available longitude within 24 hours of 'Day' and 'Time.'



<b>Deepest</b>	The deepest depth the tag was at during the light curve.
<b>SSTTime</b>	Time of day when the sea surface temperature was sampled.
<b>SSTDepth</b>	Depth, in meters, when the temperature was sampled. If greater than 10 m, the value is not considered a reliable surface measurement and is not used in GPE3.
<b>SSTTemp</b>	Temperature in degrees C of the SSTDepth.
<b>CorrectedSolarNoon</b>	The midpoint of the time between the tag dawn and dusk curves. Not provided for all tag types.
<b>SolarLongitude</b>	Longitude based on the tag determined midpoint between dawn and dusk. This is calculated using a standard astronomical equation without any filtering and may differ from GPE3 output. Not provided for all tag types.
<b>SolarLatitude</b>	Latitude based on the tag determined day length. This is calculated using a standard astronomical equation without any filtering and may differ from GPE3 output. Not provided for all tag types.
<b>Type</b>	The type of information contained in this row (Dawn curve, Dusk Curve, Begin = deployment start date, End = Deployment end date).
<b>Delta</b>	The number of seconds between individual light level samples in the following list.
<b>MinDepth</b>	The minimum depth in meters for any of the light level samples. The resolution is 32 meters. The midpoint of the range is reported.
<b>MaxDepth</b>	The maximum depth in meters for any of the light level samples. The resolution is 32 meters. The midpoint of the range is reported.
<b>AttenShallow</b>	The shallow light attenuation constant calculated by the tag and used for this dawn or dusk.
<b>AttenDeep</b>	The deep light attenuation constant calculated by the tag and used for this dawn or dusk.
<b>TravelMetric</b>	A measure of the vertical distance traveled since previous dawn or dusk. The value is log2 of the sum of absolute values of all depth deltas.
<b>FoundPrevious</b>	If the tagware detected the previous dawn or dusk, this value is set to 1. If the previous dawn or dusk could not be detected, this value is set to 0.
<b>K</b>	A value that helps ensure the integrity of the light level values.

<b>LL0....</b>	The light level samples.
<b>Depth0....</b>	The depth reading for each corresponding light reading.

## -Locations.csv

This spreadsheet consolidates all the Argos locations.

<b>Column</b>	<b>Description</b>
<b>DeployID</b>	Friendly name given to the tag by the user. If no specific friendly name is given, this is the PTT ID.
<b>PTT</b>	Argos Platform Transmitter Terminal identifier, which is a unique number identifying your instrument.
<b>Instr</b>	Wildlife Computers instrument family.
<b>Date</b>	The date and time of the location.
<b>Type</b>	Type of location: Argos.
<b>Quality</b>	Class of location generated by Argos for the satellite pass containing this message.
<b>Latitude</b>	Latitude portion of the location.
<b>Longitude</b>	Longitude portion of the location.
<b>Error radius</b>	If the position is best represented as a circle, this field gives the radius of that circle in meters.
<b>Error Semi-major axis</b>	If the estimated position error is best expressed as an ellipse, this field gives the length in meters of the semi-major elliptical axis (one half of the major axis).
<b>Error Semi-minor axis</b>	If the estimated position error is best expressed as an ellipse, this field gives the length in meters of the semi-minor elliptical axis (one half of the minor axis).
<b>Error Ellipse orientation</b>	The angle in degrees of the ellipse from true north, proceeding clockwise (0 to 360). A blank field represents 0 degrees.
<b>Offset</b>	This field is non-zero if the circle or ellipse are not centered on the (Latitude, Longitude) values on this row. "Offset" gives the distance in meters from (Latitude, Longitude) to the center of the ellipse.
<b>Offset orientation</b>	If the "Offset" field is non-zero, this field is the angle in degrees from (Latitude, Longitude) to the center of the ellipse. Zero degrees is true north; a blank field represents 0 degrees.





<b>GPE MSD</b>	Historical. No longer applicable.
<b>GPE U</b>	Historical. No longer applicable.
<b>Comment</b>	Optional text field. May indicate suspect locations, some of which are not included in the KMZ files.

## -X-Locations.csv

This spreadsheet consolidates Argos and Fastloc GPS locations. The 'X' represents the run number selected in GPS Solver on the Portal.

<b>Column</b>	<b>Description</b>
<b>DeployID</b>	Friendly name given to the tag by the user. If no specific friendly name is given, this is the PTT ID.
<b>PTT</b>	Argos Platform Transmitter Terminal identifier, which is a unique number identifying your instrument.
<b>Instr</b>	Wildlife Computers instrument family.
<b>Date</b>	The date and time of the location.
<b>Type</b>	The type of location: Argos or GPS.
<b>Quality</b>	Class of location generated by Argos for the satellite pass containing this message.
<b>Latitude</b>	Latitude portion of the location.
<b>Longitude</b>	Longitude portion of the location.
<b>Error radius</b>	If the position is best represented as a circle, this field gives the radius of that circle in meters.
<b>Error Semi-major axis</b>	If the estimated position error is best expressed as an ellipse, this field gives the length in meters of the semi-major elliptical axis (one half of the major axis).
<b>Error Semi-minor axis</b>	If the estimated position error is best expressed as an ellipse, this field gives the length in meters of the semi-minor elliptical axis (one half of the minor axis).
<b>Error Ellipse orientation</b>	The angle in degrees of the ellipse from true north, proceeding clockwise (0 to 360). A blank field represents 0 degrees.
<b>Offset</b>	This field is non-zero if the circle or ellipse are not centered on the (Latitude, Longitude) values on this row. "Offset" gives the distance in meters from (Latitude, Longitude) to the center of the ellipse.
<b>Offset orientation</b>	If the "Offset" field is non-zero, this field is the angle in degrees from (Latitude, Longitude) to the center of the ellipse. Zero degrees is true north; a blank field represents 0 degrees.



<b>GPE MSD</b>	Historical. No longer applicable.
<b>GPE U</b>	Historical. No longer applicable.
<b>Comment</b>	Optional text field.

## -MinMaxDepth.csv

This file is produced from examining all data sources received from the tag and contains min and max depths experienced by it. To avoid having this file grow to a huge size, readings are approximately 6 hours apart or at the interval of the data summary bins, whichever is longer.

<b>Column</b>	<b>Description</b>
<b>DeployID</b>	Friendly name given to the tag by the user. If no specific friendly name is given, this is the PTT ID.
<b>PTT</b>	Argos Platform Transmitter Terminal identifier, which is a unique number identifying your instrument.
<b>DepthSensor</b>	Indicates the resolution of the depth sensor. Typical values are 0.1m, 0.5, and 1.0m. The value in this column is blank if the gain was unavailable - in this case a 0.5-meter resolution is assumed.
<b>Instr</b>	Wildlife Computers instrument family.
<b>Date</b>	The date that the data pertains to.
<b>LocationQuality</b>	Historical. No longer applicable.
<b>Latitude</b>	Historical. No longer applicable.
<b>Longitude</b>	Historical. No longer applicable.
<b>MinDepth</b>	The minimum depth during the period.
<b>MinAccuracy</b>	The accuracy of the MinDepth. For example, "4" means the depth is accurate to within +/- 4 meters.
<b>MinSource</b>	The data product that the depth was pulled from.
<b>MaxDepth</b>	The maximum depth during the period.

<b>MaxAccuracy</b>	The accuracy of the MaxDepth. For example, "4" means the depth is accurate to within +/- 4 meters.
<b>MaxSource</b>	The data product that the depth was pulled from.

## -MixLayer.csv

The -MixLayer.csv file is created if Mixed Layer messages (MLT) are enabled on the tag. It contains information about the mixed layer including the percentage of time spent in and out of the layer.

Column	Description
<b>DeployID</b>	Friendly name given to the tag by the user. If no specific friendly name is given, this is the PTT ID.
<b>PTT</b>	Argos Platform Transmitter Terminal identifier, which is a unique number identifying your instrument.
<b>DepthSensor</b>	Indicates the resolution of the depth sensor. Typical values are 0.1m, 0.5, and 1.0m. The value in this column is blank if the gain was unavailable - in this case a 0.5-meter resolution is assumed.
<b>Source</b>	Indicates where the data came from, or how it was generated.
<b>Instr</b>	Wildlife Computers instrument family.
<b>Date</b>	The time and date of the beginning of the mixing layer summary period.
<b>Hours</b>	The length in hours of the summary period.
<b>LocationQuality</b>	Historical. No longer applicable.
<b>Latitude</b>	Historical. No longer applicable.
<b>Longitude</b>	Historical. No longer applicable.
<b>PerCentMLTime</b>	The amount of time the tag spends in the mixed layer as a percentage of the summary period.
<b>MLTave</b>	The average of all temperature readings considered to be in the mixed layer for the summary period.

<b>MLTmin</b>	The minimum of all temperature readings considered to be in the mixed layer for the summary period.
<b>MLTmax</b>	The maximum of all temperature readings considered to be in the mixed layer for the summary period.
<b>MLDExtreme</b>	The deepest observed depth reading that was in the mixed layer for the summary period.
<b>SSTAve</b>	The average of all surface temperature readings in the summary period. A temperature is considered a surface temperature if the depth is no more than five meters.
<b>SSTmin</b>	The minimum surface temperature reading in the summary period.
<b>SSTmax</b>	The maximum surface temperature reading in the summary period.
<b>TempMin</b>	The minimum observed temperature in the summary period.
<b>DepthMin</b>	The minimum observed depth reading in the summary period.
<b>DepthMax</b>	The maximum observed depth reading in the summary period.

## -Orientation.csv

Each row in this spreadsheet represents one summary period of orientation data. This data product characterizes the vertical orientation over time of a single-point mount MiniPAT. Orientation data uses the onboard accelerometer and is designed to detect activity. It is only available on shorter deployments with an archive sample interval of one second.

<b>Column</b>	<b>Description</b>
<b>Upright</b>	The percentage of time that the tag was upright.
<b>Knockdown</b>	Number of times the tag was knocked down.
<b>MinDry</b>	Minimum dry reading.
<b>MaxDry</b>	Maximum dry reading.

## -PDTs.csv

A PDT is a **P**rofile of **D**epth and **T**emperature. If suitably configured, several Wildlife Computers tags measure external temperature as a function of depth. At the end of each summarization period, the tag examines the collected temperature and depth readings and constructs a message containing a subset of the sampled values. This spreadsheet contains those readings.

Column	Description
<b>DeployID</b>	Friendly name given to the tag by the user. If no specific friendly name is given, this is the PTT ID.
<b>PTT</b>	Argos Platform Transmitter Terminal identifier, which is a unique number identifying your instrument.
<b>DepthSensor</b>	Indicates the resolution of the depth sensor. Typical values are 0.1m, 0.5, and 1.0m. The value in this column is blank if the gain was unavailable - in this case a 0.5-meter resolution is assumed.
<b>Source</b>	Indicates where the data came from, or how it was generated.
<b>Instr</b>	Wildlife Computers instrument family.
<b>Date</b>	The time and date of the beginning of the PDT summary period.
<b>Duration</b>	The time between the deepest/oldest point in the profile and the time the profile was finished or created (minutes).
<b>Time Offset</b>	Calculated difference between the tag's clock and the time reported by Argos.
<b>Count</b>	Total number of times this data item was received, verified, and successfully decoded.
<b>LocationQuality</b>	Historical. No longer applicable.
<b>Latitude</b>	Historical. No longer applicable.
<b>Longitude</b>	Historical. No longer applicable.
<b>BadTherm</b>	1 if the tag reported a broken external thermistor during the summary period, 0 if the tag did not report a broken thermistor, and blank if the tag does not report the thermistor condition.
<b>NumBins</b>	Number of profile points.

<b>Partial</b>	This value indicates whether this PDT contains the full set of data for the summary period. Blank = the entire data set was received and decoded. 1 = Only the shallow part was received and decoded. 2 = Only the deep part was received and decoded.
<b>Depth1 ... Depthx</b>	The depth at which a series of readings were taken.
<b>Depth1Error ... DepthxError</b>	The accuracy of the depth-reading which is related to the resolution of the encoded depth. For example, "4" means the measured depth is within +/- 4 meters of the reported value.
<b>MinTemp1 ... MinTempx</b>	The value depends on the tag type. For MiniPATs or SPLASH10 tags, it is the minimum temperature observed at the corresponding depth. For microPATs, it is the lower bound of the temperature range for the observed maximum temperature at that depth. For SCOUT-Temp tags, this is the lower bound of the temperature resolution.
<b>MaxTemp1 ... MaxTempx</b>	The value depends on the tag type. For MiniPATs or SPLASH10 tags, it is the maximum temperature observed at the corresponding depth. For microPATs, it is the upper bound of the temperature range for the observed maximum temperature at that depth. For SCOUT-Temp tags, this is the upper bound of the temperature resolution.
<b>%Ox1 ... %Oxx</b>	Percent Oxygen at the corresponding depth.
<b>Discont1 ... Discontx</b>	This represents whether there was a discontinuity at this depth. 1 = discontinuity. 0 = no discontinuity.

## -RawArgos.csv

The RawArgos.csv includes all un-decoded messages received from Argos, including satellite pass information.

Column	Description
<b>Prog</b>	The Argos Program number that the PTT ID belongs to.
<b>PTT</b>	Argos Platform Transmitter Terminal identifier, which is a unique number identifying your instrument.
<b>Len</b>	Length of the message (number of bytes).
<b>Satellite</b>	Satellite name.
<b>Class</b>	Class of location generated by Argos for the satellite pass containing this message.
<b>Pass</b>	This counter increments by one for each satellite pass that receives a message from the tag.

<b>PassDate</b>	The date of the satellite pass.
<b>PassTime</b>	The time of the satellite pass.
<b>Latitude</b>	Latitude calculated by Argos for the satellite pass of interest.
<b>Longitude</b>	Longitude calculated by Argos for the satellite pass of interest.
<b>Comment</b>	An optional text field.
<b>Frequency</b>	Calculated frequency of the transmitter.
<b>Power</b>	The best received signal strength (dB) during the satellite.
<b>IQ</b>	Argos-supplied value which gives transmitter frequency information.
<b>Dups</b>	The number of times this message was received.
<b>MsgDate</b>	The date that Argos received the message.
<b>MsgTime</b>	The time that Argos received the message.
<b>Latitude2</b>	Argos DI messages contain a second latitude value since their location algorithm can generate two positions. This is the second latitude value.
<b>Longitude2</b>	Argos DI messages contain a second longitude value since their location algorithm can generate two positions. This is the second longitude value.
<b>Duration</b>	Duration of the satellite pass.
<b>Error radius</b>	If the position is best represented as a circle, this field gives the radius of that circle in meters.
<b>Error Semi-major axis</b>	If the estimated position error is best expressed as an ellipse, this field gives the length in meters of the semi-major elliptical axis (one half of the major axis).
<b>Error Semi-minor axis</b>	If the estimated position error is best expressed as an ellipse, this field gives the length in meters of the semi-minor elliptical axis (one half of the minor axis).
<b>Error Ellipse orientation</b>	The angle in degrees of the ellipse from true north, proceeding clockwise (0 to 360). A blank field represents 0 degrees.

<b>Offset</b>	This field is non-zero if the circle or ellipse are not centered on the (Latitude, Longitude) values on this row. "Offset" gives the distance in meters from (Latitude, Longitude) to the center of the ellipse.
<b>Offset orientation</b>	If the "Offset" field is non-zero, this field is the angle in degrees from (Latitude, Longitude) to the center of the ellipse. Zero degrees is true north; a blank field represents 0 degrees.
<b>SENSOR #01....</b>	Raw message data.

## -RTC.csv

Many tags incorporate an on-board clock to keep track of the current date and time. All clocks have some amount of drift depending on many factors such as initial calibration, reference frequency technology, ambient temperature, etc. The Wildlife Computers Data Portal maintains an internal database of tag time vs. real-world time and makes timestamp corrections when necessary. This spreadsheet details the Data Portal's internal correction database.

Column	Description
<b>DeployID</b>	Friendly name given to the tag by the user. If no specific friendly name is given, this is the PTT ID.
<b>PTT</b>	Argos Platform Transmitter Terminal identifier, which is a unique number identifying your instrument.
<b>Instr</b>	Wildlife Computers instrument family.
<b>CorrectionType</b>	<p>The kind of clock correction represented by this entry.</p> <p><b>Weak</b> -This timestamp is not completely trusted. It was assumed or inferred. For instance, the clock is assumed correct at the beginning of a deployment, so that entry would be marked as "Weak." Another kind of "Weak" correction might be a clock value transmitted by the tag, but without a corresponding CRC or checksum.</p> <p><b>Strong</b> – The clock correction came from a trustworthy source. The tag's transmitted time was accompanied in the transmission by a CRC or other means of validating the transmitted time value.</p> <p><b>UserSupplied</b> – The times were entered by the user (in the Portal) and are assumed correct.</p>
<b>TagDate</b>	Date on the tag.
<b>TagTime</b>	Time on the tag.
<b>RealDate</b>	Actual real-world date.
<b>RealTime</b>	Actual real-world time.



## -Series.csv

Subsampled archive data that is sent through Argos. While potentially consuming significant bandwidth, detailed readings are sometimes critical. If the tag sends such time series data, the resulting decoded values appear in this spreadsheet.

To reduce the bandwidth required to transmit these messages, special message encoding techniques are employed by the tag to pack more information into each Argos message. While this reduces the number of transmitted messages, the tradeoff is a reduction in the accuracy of the decoded values. The 'DRange,' 'TRange' and 'ARange' columns characterize the potential error contained in the 'Depth,' 'Temperature' and 'Activity' columns, respectively.

Column	Description
<b>DeployID</b>	Friendly name given to the tag by the user. If no specific friendly name is given, this is the PTT ID.
<b>PTT</b>	Argos Platform Transmitter Terminal identifier, which is a unique number identifying your instrument.
<b>DepthSensor</b>	Indicates the resolution of the depth sensor. Typical values are 0.1m, 0.5, and 1.0m. The value in this column is blank if the gain was unavailable - in this case a 0.5-meter resolution is assumed.
<b>Source</b>	Indicates where the data came from, or how it was generated.
<b>Instr</b>	Wildlife Computers instrument family.
<b>Day</b>	The day the time series data pertains to.
<b>Time</b>	The time the time series data pertains to.
<b>LocationQuality</b>	Historical. No longer applicable.
<b>Latitude</b>	Historical. No longer applicable.
<b>Longitude</b>	Historical. No longer applicable.
<b>Depth</b>	Sample depth in meters.
<b>DRange</b>	± error band in meters for 'Depth.'
<b>Temperature</b>	Sample temperature in degrees C.
<b>TRange</b>	± error band in degrees C for 'Temperature.'
<b>Activity</b>	Count of the number of high activity outliers.
<b>ARange</b>	± error band in number for 'Activity.'

## -SeriesRange.csv

This file is a companion file to the Series.csv spreadsheet. It consolidates the minimum and maximum values observed for depth and temperature and provides summarized activity data for each summary period. The tag is sampling its sensors at a higher rate than what is transmitted in the Time Series messages; the values found in this file may have been observed during one of those higher rate samples. Therefore, it is possible that any min or max value found in this file *might not be present* in the Series.csv file.

Column	Description
<b>DeployID</b>	Friendly name given to the tag by the user. If no specific friendly name is given, this is the PTT ID.
<b>PTT</b>	Argos Platform Transmitter Terminal identifier, which is a unique number identifying your instrument.
<b>DepthSensor</b>	Indicates the resolution of the depth sensor. Typical values are 0.1m, 0.5, and 1.0m. The value in this column is blank if the gain was unavailable - in this case a 0.5-meter resolution is assumed.
<b>Source</b>	Indicates where the data came from, or how it was generated.
<b>Instr</b>	Wildlife Computers instrument family.
<b>Count</b>	Total number of times this data item was received, verified, and successfully decoded.
<b>Start</b>	Start of the period for which these ranges are valid.
<b>End</b>	End of the period for which these ranges are valid.
<b>LocationQuality</b>	Historical. No longer applicable.
<b>Latitude</b>	Historical. No longer applicable.
<b>Longitude</b>	Historical. No longer applicable.
<b>MinDepth</b>	The minimum depth observed during the period.
<b>MinDepthAccuracy</b>	The accuracy of 'MinDepth.'
<b>MaxDepth</b>	The maximum depth observed during the period.

<b>MaxDepthAccuracy</b>	The accuracy of 'MaxDepth.'
<b>MinTemp</b>	The minimum temperature observed during the period.
<b>MinTempAccuracy</b>	The accuracy of 'MinTemp.'
<b>MaxTemp</b>	The maximum temperature observed during the period.
<b>MaxTempAccuracy</b>	The accuracy of 'MaxTemp.'
<b>MobMean</b>	Mean of the mobility metric observed during the period.
<b>MobSD</b>	The standard deviation associated with the mobility metric mean during the period.
<b>ActivitySum</b>	Count of the number of high activity outliers during the period.

## -SST.csv

This spreadsheet is produced from examining all data sources received from the tag and contains a set of readings qualifying as possible Sea Surface Temperatures. A temperature reading within five meters of the surface is considered an SST. To avoid having this file grow to a huge size, readings are spaced out approximately 90 minutes apart.

<b>Column</b>	<b>Description</b>
<b>DeployID</b>	Friendly name given to the tag by the user. If no specific friendly name is given, this is the PTT ID.
<b>PTT</b>	Argos Platform Transmitter Terminal identifier, which is a unique number identifying your instrument.
<b>DepthSensor</b>	Indicates the resolution of the depth sensor. Typical values are 0.1m, 0.5, and 1.0m. The value in this column is blank if the gain was unavailable - in this case a 0.5-meter resolution is assumed.
<b>Instr</b>	Wildlife Computers instrument family.
<b>Date</b>	The date and time of the start of the summary period.
<b>LocationQuality</b>	Historical. No longer applicable.
<b>Latitude</b>	Historical. No longer applicable.
<b>Longitude</b>	Historical. No longer applicable.
<b>Depth</b>	The depth at which the temperature was measured.

<b>Temperature</b>	The measured temperature.
<b>Source</b>	<p>Where the Depth and Temperature measurements came from. Knowing the source of the SST data is especially important in understanding the meaning of the associated timestamp and the depth.</p> <ol style="list-style-type: none"> <li>1) The MixLayer SST data is an estimate of SST integrated over the histogram summary period. So, if you are getting only one MixLayer message per day then the data is a daily summary, and the timestamp marks the beginning of that summary period.</li> <li>2) The TimeSeries SST data are useful because they are individual discrete samples of temperature each marked with an absolute timestamp. The trouble with TS SST data is that the corresponding depth value can have a varying resolution depending on how the associated Depth was encoded.</li> <li>3) The SST data contained in LightLoc messages are also discrete temperature readings, preferentially sampled during the night if the animal comes to the surface at night, and the associated depths are reported at full resolution.</li> <li>4) Status SST values are also individual discrete samples of temperature, each marked with an absolute timestamp, and are only recorded when the tag is transmitting at the surface. For popoff tags these will be from after the tag has released from the animal.</li> </ol>

## -Status.csv

Every Wildlife Computers tag sends regular status messages in addition to transmitting its experimental information. Status messages contain information which indicate the health and overall state of the tag. Not all tags send the same information, so some columns will be blank for specific tags. For instance, the MiniPAT does not support haul out so the 'HaulOut' column will always be empty for a MiniPAT.

Column	Description
<b>DeployID</b>	Friendly name given to the tag by the user. If no specific friendly name is given, this is the PTT ID.
<b>PTT</b>	Argos Platform Transmitter Terminal identifier, which is a unique number identifying your instrument.
<b>DepthSensor</b>	Indicates the resolution of the depth sensor. Typical values are 0.1m, 0.5, and 1.0m. The value in this column is blank if the gain was unavailable - in this case a 0.5-meter resolution is assumed.
<b>Instr</b>	Wildlife Computers instrument family.
<b>SW</b>	The version of software on the tag.
<b>RTC</b>	Value of the tag's onboard clock.

<b>Received</b>	Time and date of message reception as reported by Argos.
<b>Time Offset</b>	Calculated difference between the tag's clock and the time reported by Argos. Adding this value to the value in the 'RTC' column should yield the value in the 'Received' column.
<b>LocationQuality</b>	Location class assigned by Argos for the computed position of the tag when Argos received this status message.
<b>Latitude</b>	Latitude of the position of the tag generated by Argos when Argos received this status message.
<b>Longitude</b>	Longitude of the position of the tag generated by Argos when Argos received this status message.
<b>Type</b>	Some tags send strongly validated status messages, others do not. If this message was strongly validated, the field contains a value such as 'CRC' or 'CKSUM'. If blank, you may want to look for repeated messages to confirm the data are accurate.
<b>HauledOut</b>	Contains '1' if the tag was hauled out at the time of the transmission, '0' if not hauled out, and is blank if the tag does not support haulout or if the original message did not contain haulout information.
<b>BrokenThermistor</b>	Some tags have an external thermistor which may be subject to damage. This field is '1' if the tag has detected a broken thermistor, '0' if the thermistor is not broken, and blank if the tag does not transmit this information.
<b>BrokenLink</b>	If the tag supports automatic release from the animal, and if the tag has the capability to determine if the release mechanism is currently intact, this field will contain a '0' if the mechanism is intact and a '1' if the mechanism is broken or released.
<b>Transmits</b>	The number of Argos transmissions generated by the tag. NOT the number of messages received by Argos.
<b>BattVoltage</b>	Battery voltage measured by the tag during the transmission of this status message.
<b>TransmitVoltage</b>	Transmitter's Power Amp supply voltage. Used for diagnostics by Wildlife Computers.
<b>TransmitCurrent</b>	Transmitter's Power Amp supply current. Used for diagnostics by Wildlife Computers.
<b>Temperature</b>	Temperature measured by the tag just prior to this transmission.
<b>Depth</b>	Depth sensor reading prior to transmission. Since the tag must be at the surface to transmit, this value should be close to zero and therefore indicates any drift in the sensor. The ZeroDepthOffset has not been applied to this value.
<b>MaxDepth</b>	Maximum depth measured by the tag during some previous period (usually the previous day but can vary depending on tag type).
<b>ZeroDepthOffset</b>	The amount of offset that the tag is currently applying to the Depth sensor readings if the Zero Offset Correction feature is enabled on the tag. The feature is working correctly if $0 \text{ meters} = \text{Depth} + \text{ZeroDepthOffset} * \text{Resolution}$ where Depth is the uncorrected value reported in this status message.

<b>LightLevel</b>	Light level measured by the tag just prior to this transmission.
<b>NoDawnDusk</b>	The number of days during the deployment for which no dawn or dusk curve was found. If present, the count includes only days prior to pop-off.
<b>ReleaseType</b>	For pop-up tags, this is the reason the tag is released from the animal.
<b>ReleaseTime</b>	Time recorded by the tag's on-board clock when the tag initiated the release mechanism.
<b>InitiallyBroken</b>	'1' if the release link was unexpectedly broken when release was initiated; '0' if not broken, and blank if unknown.
<b>BurnMinutes</b>	Number of minutes the release link was energized before the tag detected the link had burned through.
<b>ReleaseDepth</b>	Depth sensor reading when release was initiated.
<b>FastGPSPower</b>	Number of mAH consumed to date by the Fastloc GPS board.
<b>TWICPower</b>	Number of mAH consumed to date by the Argos transmitter.
<b>PowerLimit</b>	Deployment may stop if consumed mAHrs exceeds this value.
<b>WetDry</b>	The wet/dry sensor reading at the time of this status message.
<b>MinWetDry</b>	The minimum wet/dry sensor value observed during the previous day.
<b>MaxWetDry</b>	The maximum wet/dry sensor value observed during the previous day.
<b>WetDryThreshold</b>	The current wet/dry sensor threshold value. Wet/dry sensor values above this value indicate the tag is dry. Sensor values less than this value indicate the tag is wet.
<b>StatusWord</b>	This low-level diagnostic is sent to illuminate the tag's internal state. This is used for diagnostics at Wildlife Computers.
<b>TransmitPower</b>	Some tags have variable power transmitters. This field indicates the tag's current transmitter power setting.
<b>Resets</b>	The number of resets the tag has experienced during deployment. It should be blank or zero.
<b>PreReleaseTilt</b>	The measured tilt in degrees for one hour prior to release.

<b>PreReleaseTiltSd</b>	The standard deviation of the PreReleaseTilt measurements.
<b>PreReleaseTiltCount</b>	The number of samples used to calculate pre-release tilt.
<b>XmitQueue</b>	How many data messages are waiting to be sent.
<b>FastGPSLocNumber</b>	The tag increments a counter every time a FastLoc snapshot is attempted. Success and failures are included in this count. This is the value of that counter at the time of transmission.
<b>FastGPSFailures</b>	The tag increments a counter each time it attempts to gather GPS satellite data but fails to see enough satellites. This is the value of that counter at the time of transmission.
<b>BattDiscon</b>	If a tag has a dangerous goods switch, this field indicates whether the screw has been inserted. '1' if disconnected (screw not inserted), '0' if connected (screw inserted), and blank if the tag does not send this info.
<b>Tilt</b>	The tilt measurement at the time of the status transmission.
<b>S11</b>	Reflected voltage measurement.
<b>ReleaseWetDry</b>	Wet/Dry reading at the time of release.
<b>ReleaseTemperature</b>	Temperature at the time release was initiated.
<b>DeploymentMaxDepth</b>	Maximum depth during the deployment.
<b>LLRangeToday</b>	Light level sensor delta since UTC 00:00 for this day.
<b>DeployStart</b>	Date and time when the deployment started.
<b>FirstPostReleaseTX</b>	Date and time when the tag made its first transmission.
<b>upright</b>	Contains '1' if the tag was upright at the time of the transmission, '0' if not.
<b>SWBuild</b>	The version of software on the tag.
<b>PercentDry</b>	Percent time dry in the previous 24 hours.
<b>MinTemperature</b>	Minimum temperature in the previous 24 hours (°C).

<b>MaxTemperature</b>	Maximum temperature in the previous 24 hours (°C).
<b>TCrit</b>	"1" indicates the tag has exceeded the maximum operating and storage temperature at least once in its lifetime.
<b>BatteryCharge</b>	Current charge state of the battery as a percent of full charge.
<b>DeltaBatteryCharge</b>	Change in battery charge as a percent of full charge over the previous 24 hours.
<b>EnergyHarvested</b>	Energy harvested in the previous 24 hours (kJ).
<b>ArgosEffort</b>	The number of transmission bursts in the current 24-hour transmission period. A metric of Argos effort.
<b>PBSHourOne</b>	"1" indicates the tag is currently in the first hour of the 24-hour transmission period.
<b>LowPowerState</b>	"1" indicates the tag is in a power-saving mode where transmissions are limited.

## -STP.csv

This spreadsheet contains stomach temperature data.

Column	Description
<b>DeployID</b>	Friendly name given to the tag by the user. If no specific friendly name is given, this is the PTT ID.
<b>PTT</b>	Argos Platform Transmitter Terminal identifier, which is a unique number identifying your instrument.
<b>Source</b>	Indicates where the data came from, or how it was generated.
<b>Instr</b>	Wildlife Computers instrument family.
<b>Day</b>	The date of the STP data.
<b>Time</b>	The time of the STP data.
<b>Count</b>	Total number of times this data item was received, verified, and successfully decoded.



<b>Type</b>	The kind of STP data. Values include: NoPill, High Resolution, Low Resolution, Feeding starts, Feeding Initial STP, Feeding Second STP, Feeding Minimum STP, Feeding Deepest Depth, and Feeding Ends.
<b>STP</b>	Stomach Temperature as reported by the stomach temperature pill.
<b>Depth</b>	The depth at which the element occurred.
<b>Ext Temp</b>	The external temperature at which 'Type' occurred.
<b>Descending</b>	A very crude and unreliable indicator which is '1' if the animal was descending and '0' if the animal was not descending.

## -Summary.csv

Each line in this spreadsheet contains information about one tag and gives general, high-level information about the tag's deployment.

Column	Description
<b>DeployID</b>	Friendly name given to the tag by the user. If no specific friendly name is given, this is the PTT ID.
<b>PTT</b>	Argos Platform Transmitter Terminal identifier, which is a unique number identifying your instrument.
<b>Instr</b>	Wildlife Computers instrument family.
<b>SW</b>	The tagware version on the tag, if available.
<b>PercentDecoded</b>	The percentage of successfully decoded messages.
<b>Passes</b>	The number of Argos satellite passes that detected the tag's transmissions during the deployment.
<b>PercentArgosLoc</b>	The percentage of Argos satellite passes resulting in a calculated Argos location. Multiple messages must be received on a pass for Argos to calculate a location.
<b>MsgPerPass</b>	The average number of received messages per satellite pass.
<b>DS</b>	The number of messages received from the tag including corrupt and duplicate messages.
<b>DI</b>	The number of diagnostic reports generated by Argos on a per satellite pass basis.
<b>MinPower</b>	The minimum received signal strength (dB) for all received transmissions as reported in the Diagnostic reports.
<b>AvgPower</b>	The average of the reported received signal strength (dB) for all transmissions as reported in the Diagnostic reports.
<b>MaxPower</b>	The maximum received signal strength (dB) for all received transmissions as reported in the Diagnostic reports.
<b>MinInterval</b>	The shortest interval between received Argos transmissions for the tag.
<b>EarliestXmitTime</b>	The time of the first received Argos transmission.

<b>LatestXmitTime</b>	The time of the last received Argos transmission.
<b>XmitDays</b>	The difference in days between LatestXmitTime and EarliestXmitTime. The number of complete days the tag has been transmitting.
<b>EarliestDataTime</b>	The time stamp of the first data point, including status messages. This should be close to the deployment date.
<b>LatestDataTime</b>	The time stamp of the last data point, excluding status messages.
<b>DataDays</b>	The difference in days between LatestDataTime and EarliestDataTime. The number of days for which data was received through Argos.
<b>ReleaseDate</b>	The date on which a pop-up tag released.
<b>ReleaseType</b>	The reason a pop-up tag released if it is known.
<b>DeployDate</b>	The date the tag was deployed if it is known.

## Contacting Wildlife Computers

### U.S. and International

Members of the Wildlife Computers technical sales and support team are in Redmond, WA, USA, and Havelock North, New Zealand, allowing us to cover promptly a wide range of time zones.

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### For Asian Clients

While we welcome your direct correspondence, we recommend that you contact our colleague, Yong Huang, for assistance. Mr. Huang understands the special purchase processes for your countries and will provide you with the best service for the best price. He also is fluent in Japanese, Chinese, and English.

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