

Sea turtle satellite tracking- techniques and results

Based on: Balazs, G. H., R. K. Miya, and S. C. Beavers. 1996. Procedures to attach a satellite transmitter to the carapace of an adult green turtle, *Chelonia mydas*. In J.A. Keinath, D.E. Barnard, J.A. Musick, and B.A. Bell (comps.), Proceedings of the Fifteenth Annual Symposium on Sea Turtle Biology and Conservation, February 20-25, 1995, Hilton Head, South Carolina, p. 21-26. U.S. Dep. Commer. NOAA Tech. Memo. NMFS-SEFSC- 387.

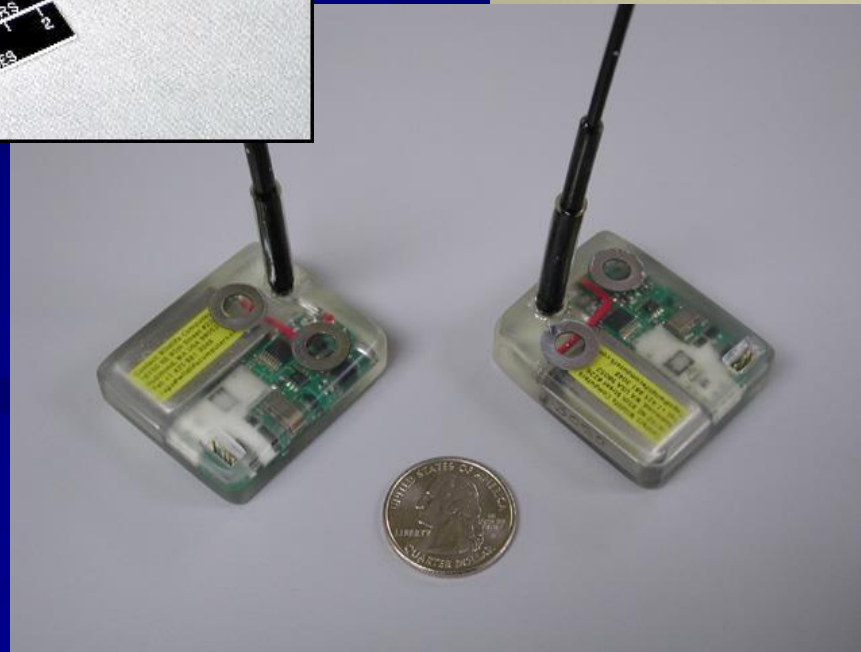
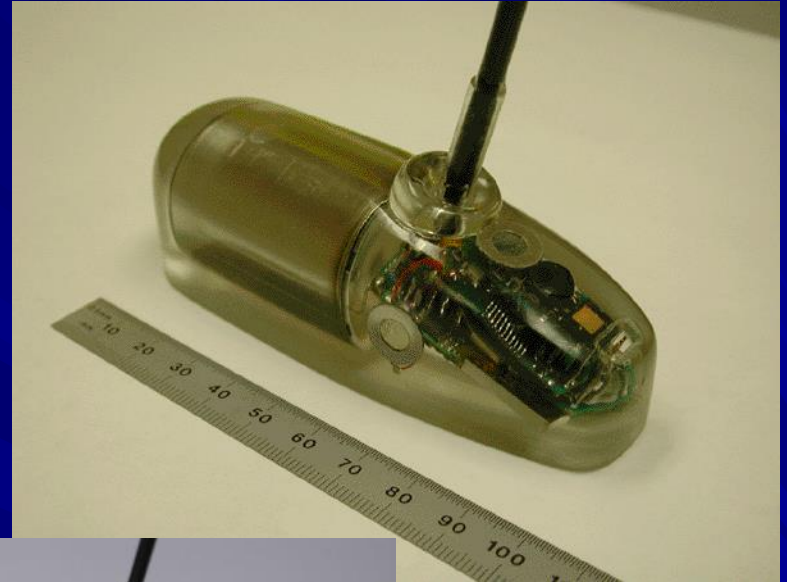
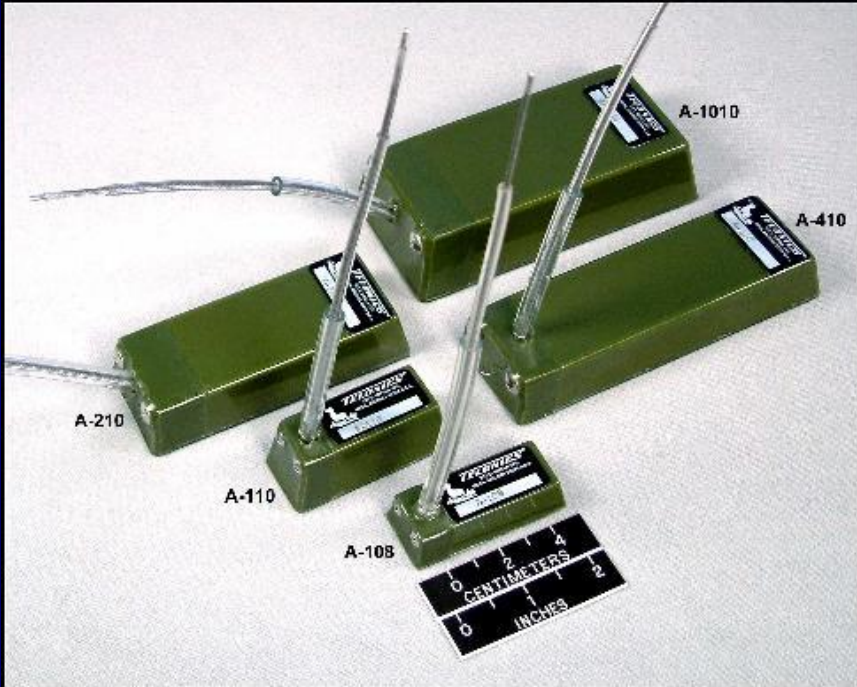
Modified by Denise M. Parker March 2006



Supplies



Transmitters (PTTs)



Prepare Shell





Elastomer













Set on Shell









Fiberglass and Resin Attachment







**Surfboard
Laminating
Resin**
Polyester

FIBERGLASS HAWAII

CAUTION: Flammable liquid. Vapors harmful—see SDS panel.
KEEP OUT OF REACH OF CHILDREN

32 FL. OZ. (0.95 L)

Catalyst
MEK Peroxide
FIBERGLASS HAWAII
CAUTION: Flammable liquid.
Vapors harmful—see SDS panel.
KEEP OUT OF REACH OF CHILDREN









Putting on Fiberglass









Creating “Castro” Roll













Release



Websites

Sites for Argos and transmitter information

- <http://www.argosinc.com>
- <http://www.telonics.com>
- <http://www.wildlifecomputers.com>

Examples of turtle tracking

- <http://www.seaturtle.org>
- <http://www.cccturtle.org>
- <http://turtletrax.org>
- <http://www.sprep.org/turtles/topics/tracking.htm>

What to do

- Collect and compile Argos data
- Mapping
 - Hand mapping
 - Internet on-line options
 - Other options
- Assess positions for “accuracy” and finalizing maps

Example of raw Argos Data

58846 Date : 02.03.08 01:21:22 LC : 0 IQ : 50
Lat1 : 13.580S Lon1 : 164.655W Lat2 : 17.658S Lon2 : 177.298E
Nb mes : 005 Nb mes>-120dB : 000 Best level : -128 dB
Pass duration : 322s NOPC : 2
Calcul freq : 401 636830.3 Hz Altitude : 0 m
00 00

58846 Date : 02.03.08 03:00:39 LC : A IQ : 06
Lat1 : 17.658S Lon1 : 177.268E Lat2 : 24.498S Lon2 : 146.948E
Nb mes : 003 Nb mes>-120dB : 000 Best level : -134 dB
Pass duration : 184s NOPC : 1
Calcul freq : 401 636890.6 Hz Altitude : 0 m
00 00

58846 Date : 02.03.08 12:37:57 LC : Z IQ : 00
Lat1 : ??????? Lon1 : ?????????? Lat2 : ?????????? Lon2 : ??????????
Nb mes : 001 Nb mes>-120dB : 000 Best level : -126 dB
Pass duration : ???s NOPC : ?
Calcul freq : 401 636830.3 Hz Altitude : 0 m
01 7958

On-line Mapping

- <http://www.seaturtle.org/maptool/index.shtml>
 - Excellent flexibility and multiple options available to plot
 - Can plot bathymetry, SST, and other oceanographic features
 - Need to be a seaturtle.org user – simple registration
 - Good output overall best on-line option

SEATURLE.ORG Maptool - Netscape

Back Forward Reload Home Search Netscape Print Security Shop Stop

Base Map

Projection: Mercator

Buffer:

Min Lat: 0

Max Lat: 12

Min Lon: 135

Max Lon: 150

Lock:

Land: Water:

Rivers: Country Names:

Map Scale: plain

Gridlines:

Convex Hulls:

Scale Length: 100 km

Borders: Marine

Coastline: solid

Pen Width: 0.1

Inset Map: none

Layers

Bathymetry:

Color Table: relief

SST:

Global SST:

Chlorophyll:

Relief:

Topo: 100 min

Contours: 500 max

Please post questions, comments and suggestions to the [GIS and Maptool](#) forum.

Download: [PostScript File \(1MB\)](#)

136° 138° 140° 142° 144° 146° 148° 150°

12°

10°

8°

6°

4°

2°

0°

100 km

GMT 2005 Mar 11 13:24:30 seaturtle.org/maptool Projection: Mercator

[Acknowledging Maptool](#)

Please be sure to properly cite the bathymetry and SST source data if these are used in your maps.

Maptool: Layers

Bathymetry

A bathymetry grid is available as a layer in your maps. These data are from the GEBCO Digital Atlas or ETOPO2 Global 2' Elevations datasets distributed by the British Oceanographic Data Centre and NOAA's National Geophysical Data Center. The source grid has a one (GEBCO) or

Document: Done

Other Mapping Options

- GMT – General Mapping Tool
- <http://gmt.soest.hawaii.edu/>
 - Requires Unix server or Windows version is available
 - Some programming needed; either C++ or DOS
 - Very flexible and map output is determined by programming
- ArcView
 - ERSI product <http://www.esri.com/products.html>
 - Requires some knowledge of product and database set up to input data
 - Wide variety of GIS tools and geographic data sets available

Data Crunching

- Daily – input data by hand into Excel or Word and save as a text file – data should be set up as longitude, latitude, identifier (date and LC)
- Weekly or longer – Cut and paste each daily Argos file into one text file. Convert data either with Argos Data converter in the Seaturtle.org website or as outlined in handout.
 - Data should be sorted by ID number and a new text file should be created for each ID with data setup as above
 - Data should be compiled consecutively to create final tracks
 - Either only LC 1, 2 and 3 data should be used in maps or researcher needs to use judgment to determine which data points to map

FINAL MAP:

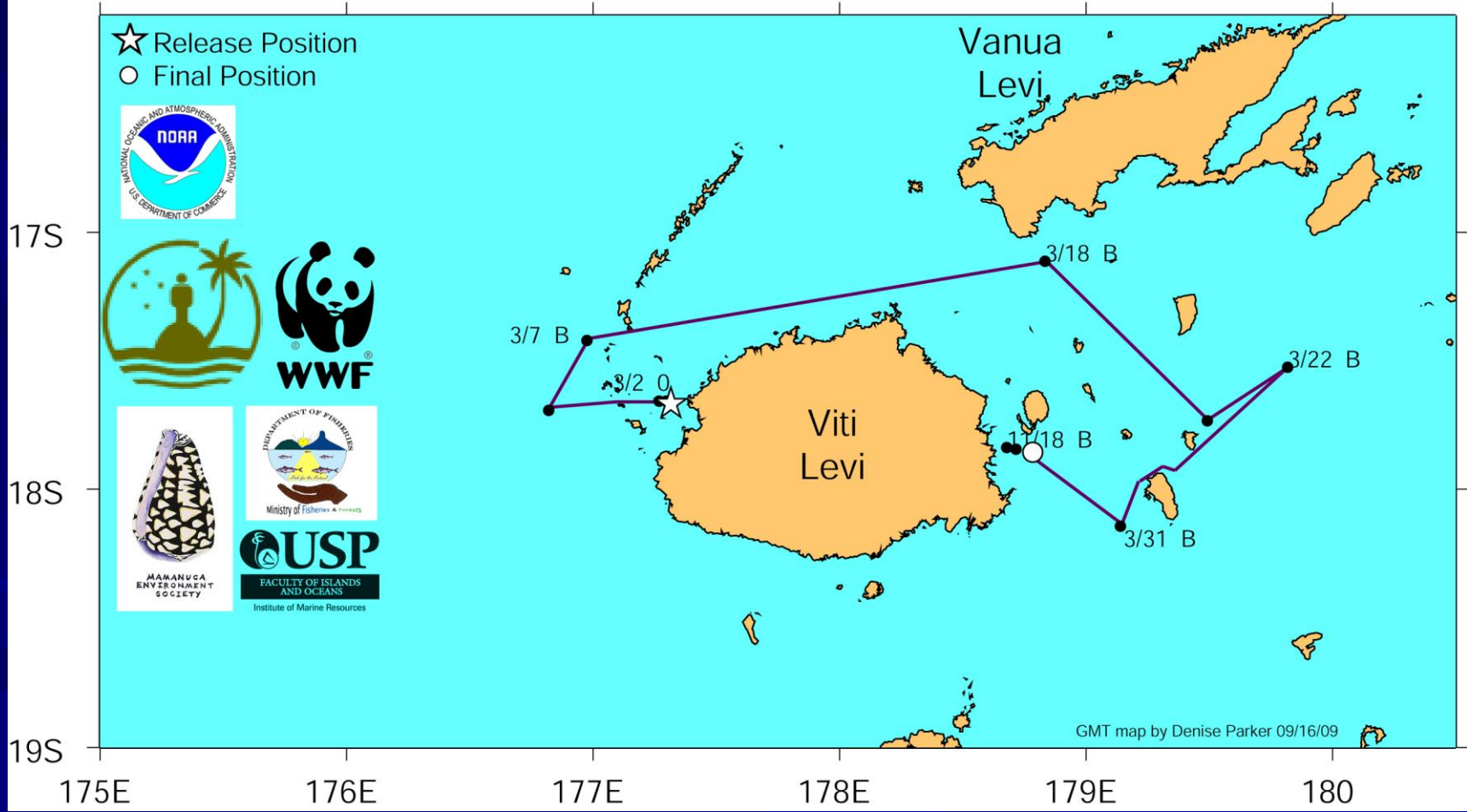
2008 movement of post-nesting hawksbill turtle, Adi Mamanuca, ID 58846

ST-20 transmitter Duty Cycle: 6/48 CCL: 79.0 cm

Date Deployed: March 2, 2008 Days Transmitting: 270 days

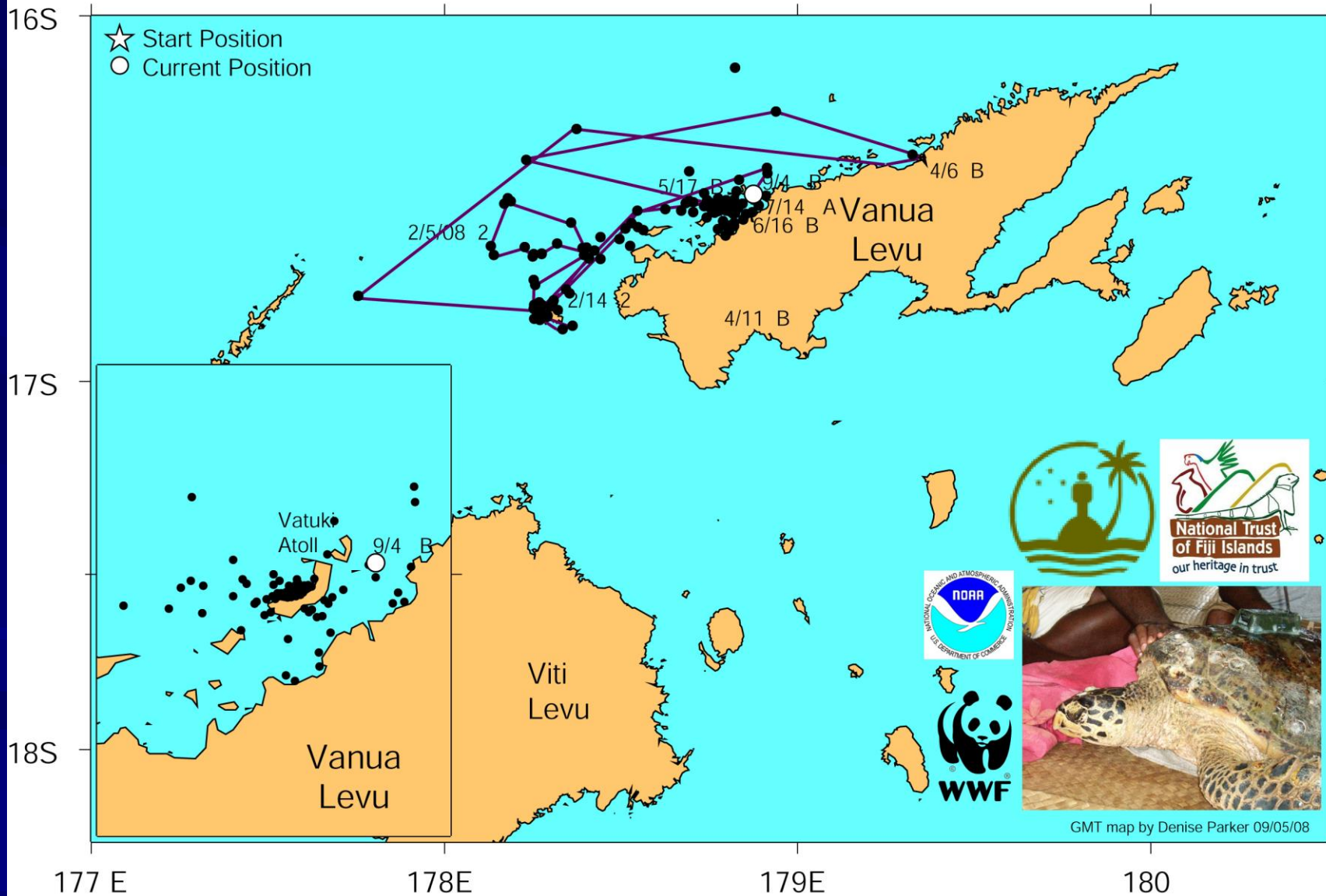
Released from Treasure Is, Mamanuca, Fiji

Distance traveled: 629 km



Update as of 9/5/08:

2008 movement of post-nesting hawksbill turtle, Marama ni Yadua, ID 19603
ST-20 transmitter Duty Cycle: 6 hrs on, 48 hrs off CCL: 88.0 cm
Date Deployed: January 13, 2008 Days Transmitting: 235 days
Released from Denimanu, Yadua, Fiji

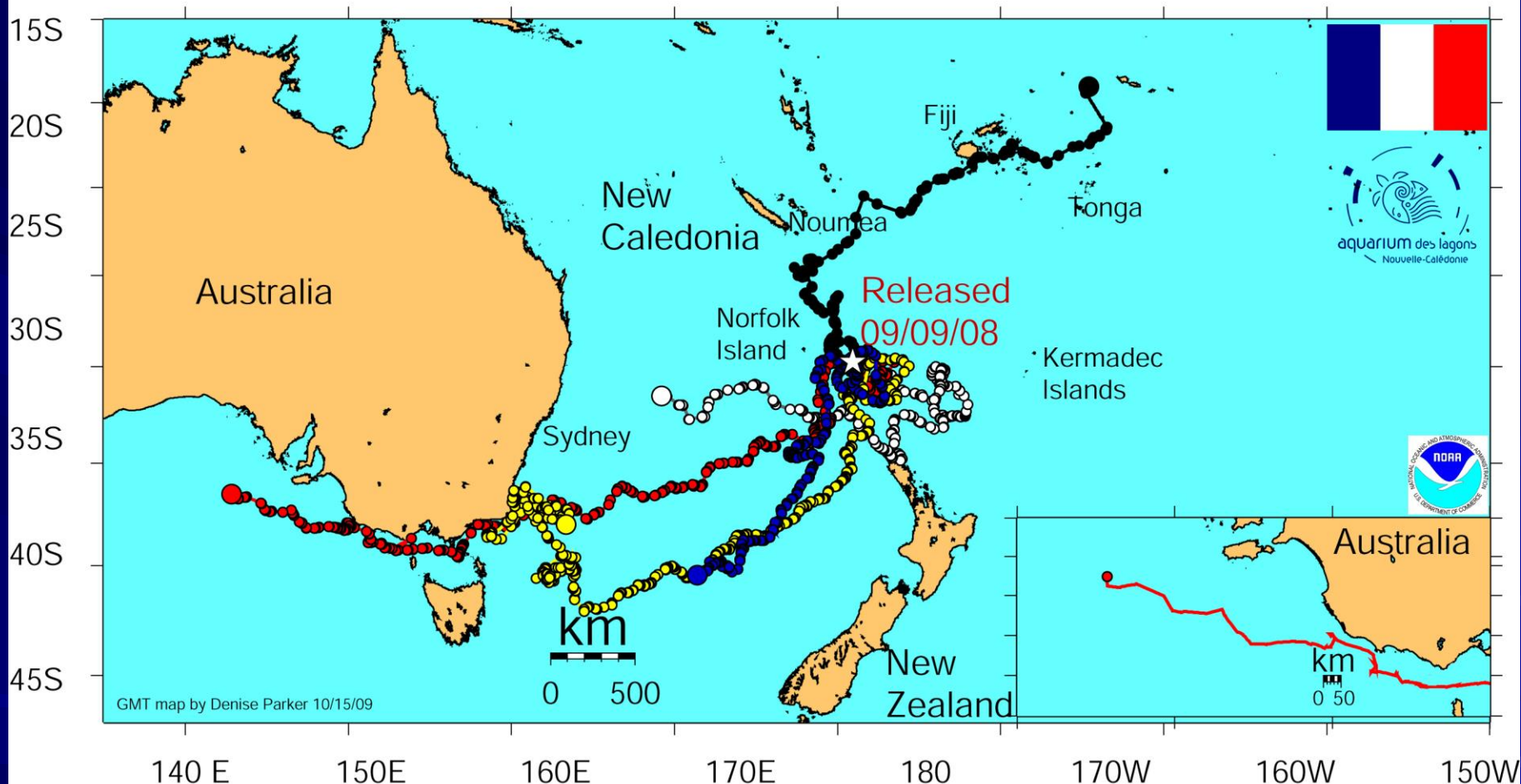


2008-2009 Movement of juvenile loggerhead turtles

released from Maritime Nationale Patrouilleur la Glorieuse

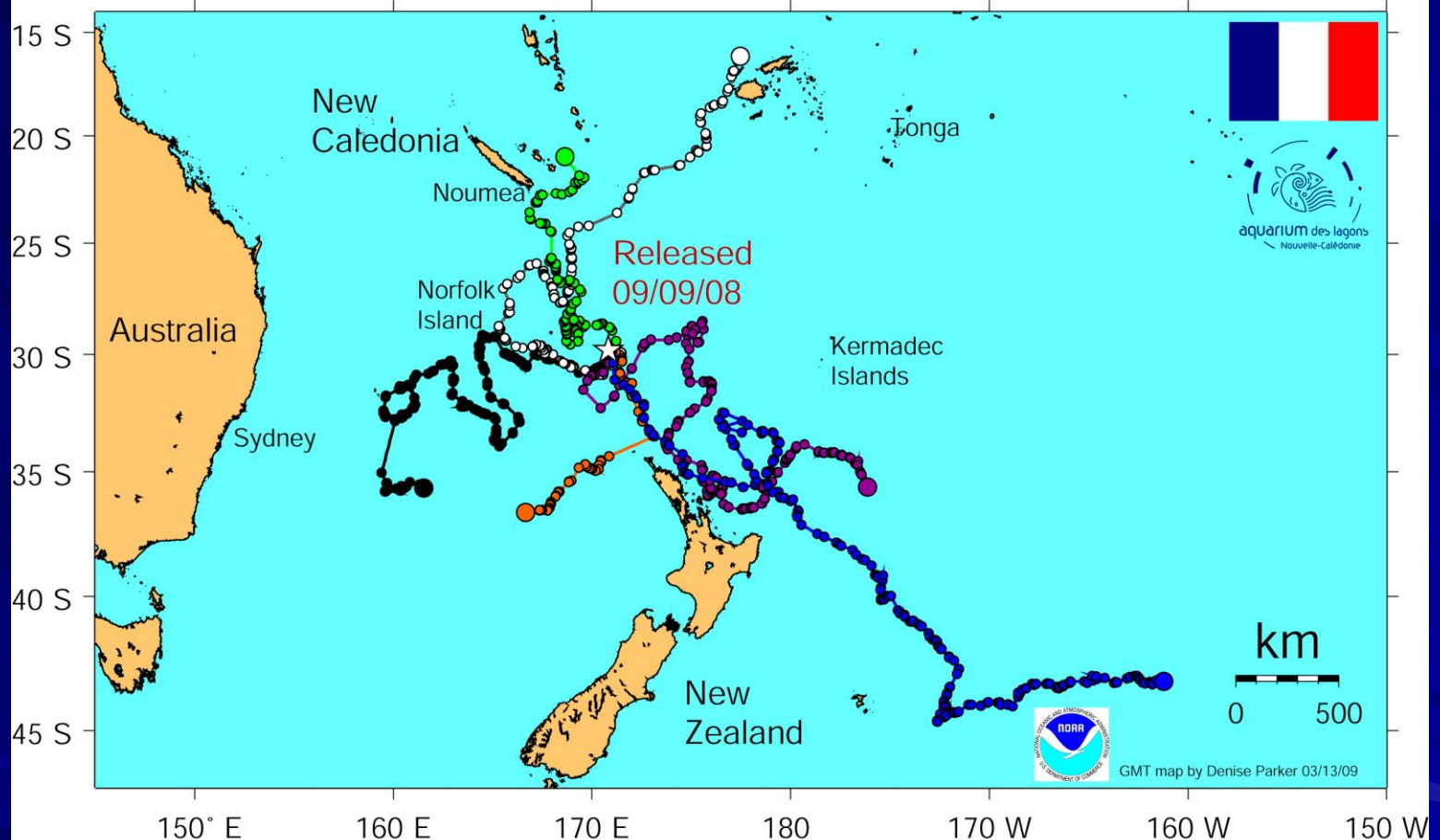
Hatched at La Roche Percee, Nouvelle-Caledonie and raised by the L'Acquarium des Lagons

SPOT5 transmitters 6/42



- 1 - ● 29060, 27.2 cm, XP28; End 3/12/09, 184 d, 4725 km
- 4 - ○ 53759, 29.2 cm, XP01; End 2/22/09, 166 d, 4139 km
- 5 - ● 53757, 27.0 cm, XP04; End 4/23/09, 226 d, 5514 km
- 6 - ● 53747, 29.7 cm, XP29; End 8/24/09, 349 d, 6641 km
- 8 - ● 53762, 27.8 cm, XP09; End 2/26/09, 170 d, 3590 km

FINAL MAP:
 2008-2009 Movement of juvenile loggerhead turtles
 released from Maritime Nationale Patrouilleur la Glorieuse
 Hatched at La Roche Percee, Nouvelle-Caledonie and raised by the L' Aquarium des Lagons
 SPOT5 anterior 6/42



- 26 - ● 50150, 27.4 cm, XP84; *End 1/20/09, 133 d, 3483 km
- 28 - ○ 22980, 28.5 cm, XP21; *End 12/18/08, 100 d, 3294 km
- 29 - ● 22275, 27.1 cm, XP18; *End 1/25/09, 138 d, 3648 km
- 30 - ● 50137, 25.5 cm, XP13; *End 1/7/09, 120 d, 1224 km
- 38 - ● 50148, 32.0 cm, XP23; *End 11/30/08, 82 d, 1907 km
- 39 - ● 53767, 29.3 cm, XP77; *End 4/3/09, 206 d, 3481 km

THE END

