MBNMS Aerial Requirements

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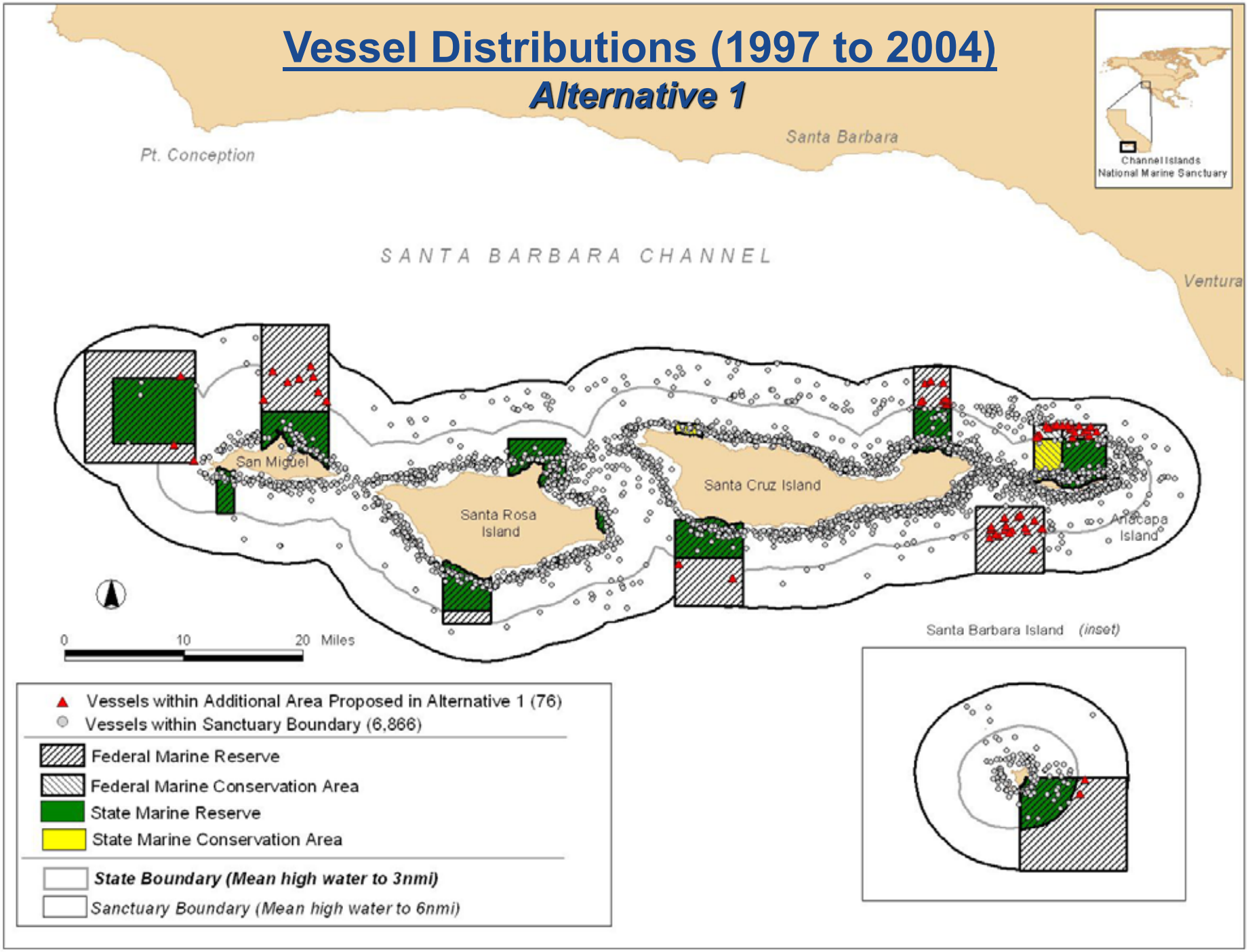
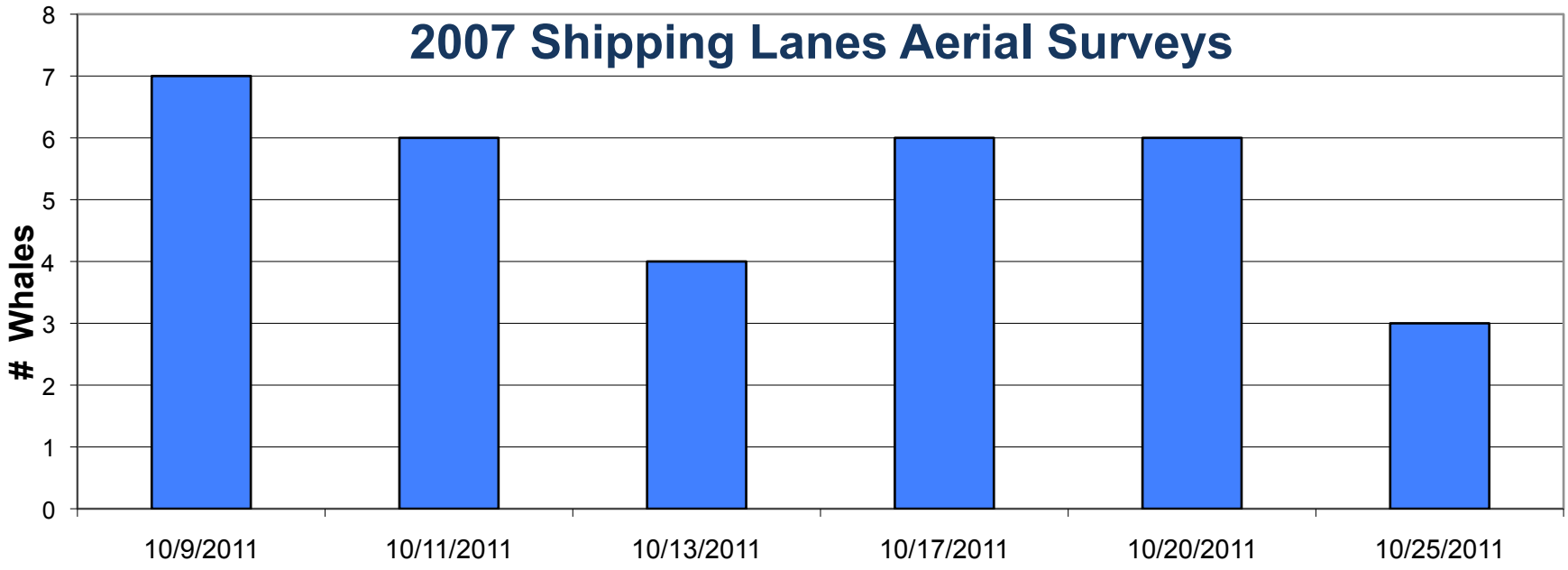
- 1997 - CINMS begins Aerial Surveys
- SAMSAP – **S**anctuary **A**erial **M**onitoring & **S**patial **A**nalysis **P**rogram
- Laptop Computer, GPS, Customized Data Collection Software
- 1000 ft 110 kts 100% visual coverage
- Living Marine Resource Surveys
- Vessel and Visitor Use Surveys

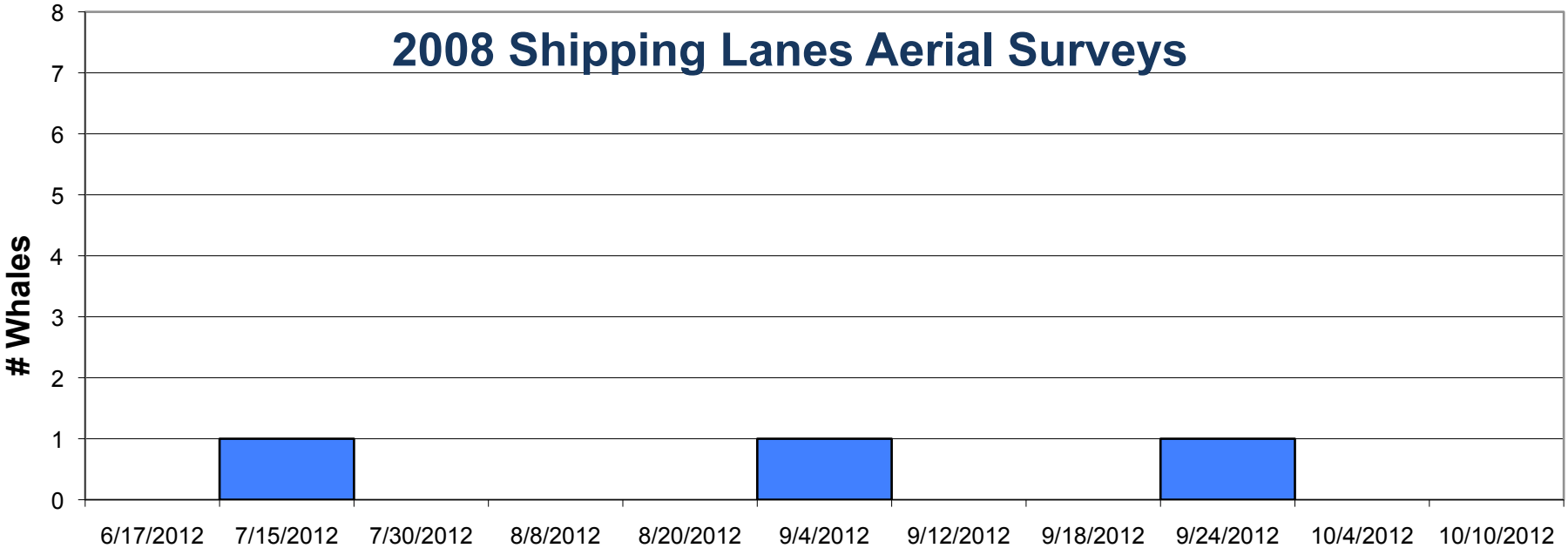
Vessel Distributions (1997 to 2004)

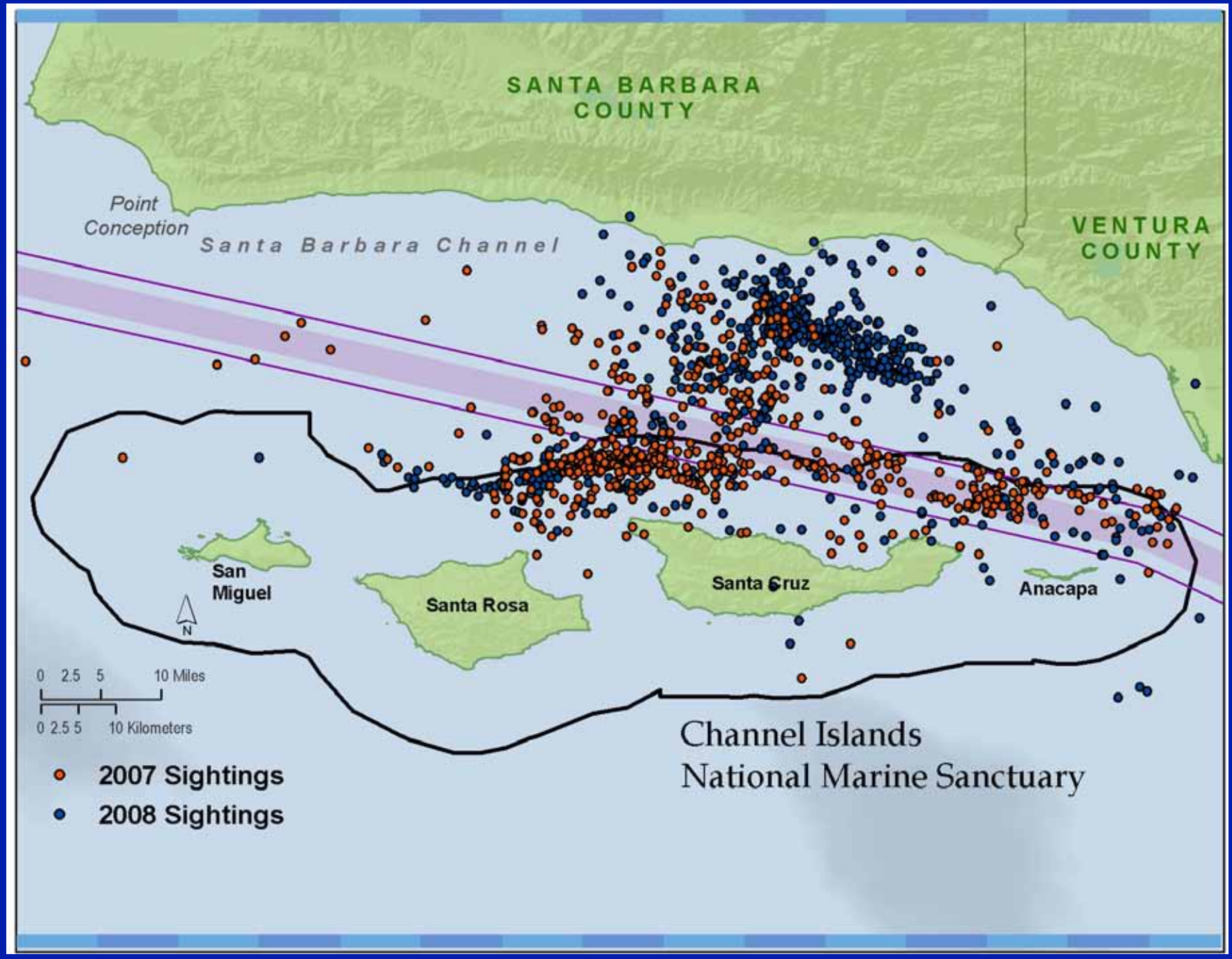
Alternative 1



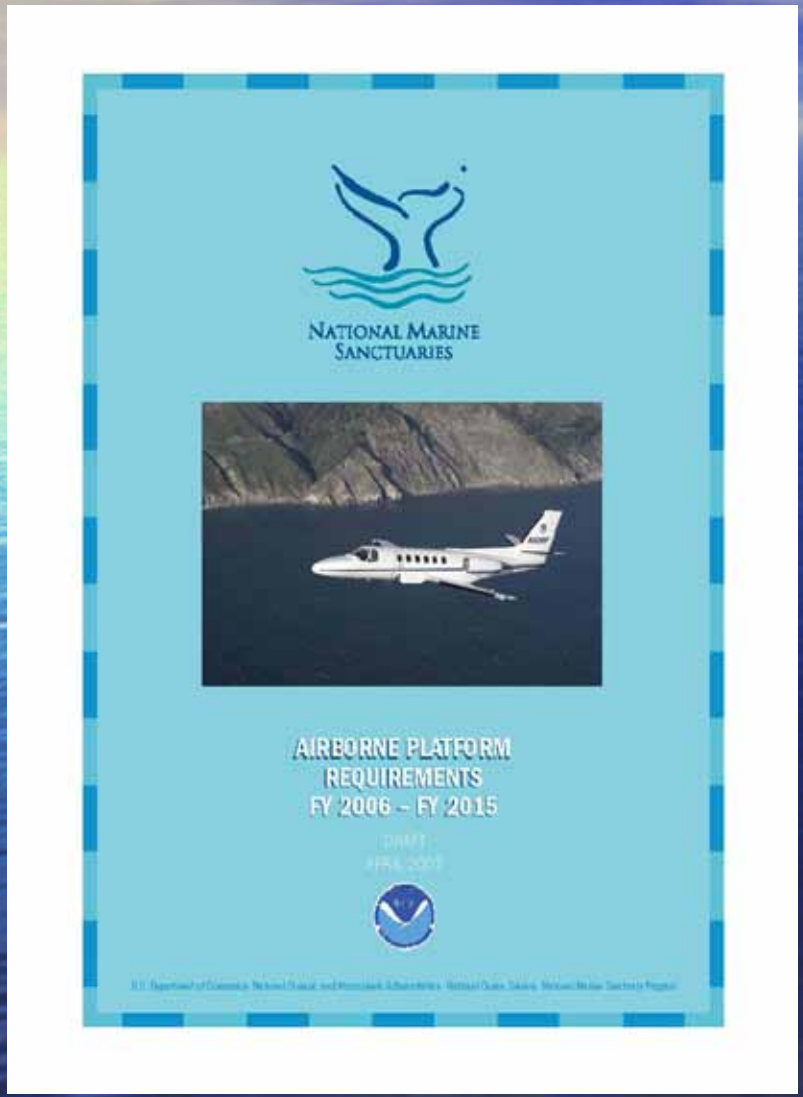
- Summer 2007 – 4 Blue Whales found dead in SB Channel
- Historic SAMSAP data used to determine seasonality and abundance
- Weekly patrol flights initiated to trigger Notice to Mariners
- Ongoing process to explore alternatives for traffic


2007 Shipping Lanes Aerial Surveys
Whales
0
1
2
3
4
5
6
7
8
10/9/2011
10/11/2011
10/13/2011
10/17/2011
10/20/2011
10/25/2011


2008 Shipping Lanes Aerial Surveys
Whales
0
1
2
3
4
5
6
7
8
6/17/2012
7/15/2012
7/30/2012
8/8/2012
8/20/2012
9/4/2012
9/12/2012
9/18/2012
9/24/2012
10/4/2012
10/10/2012

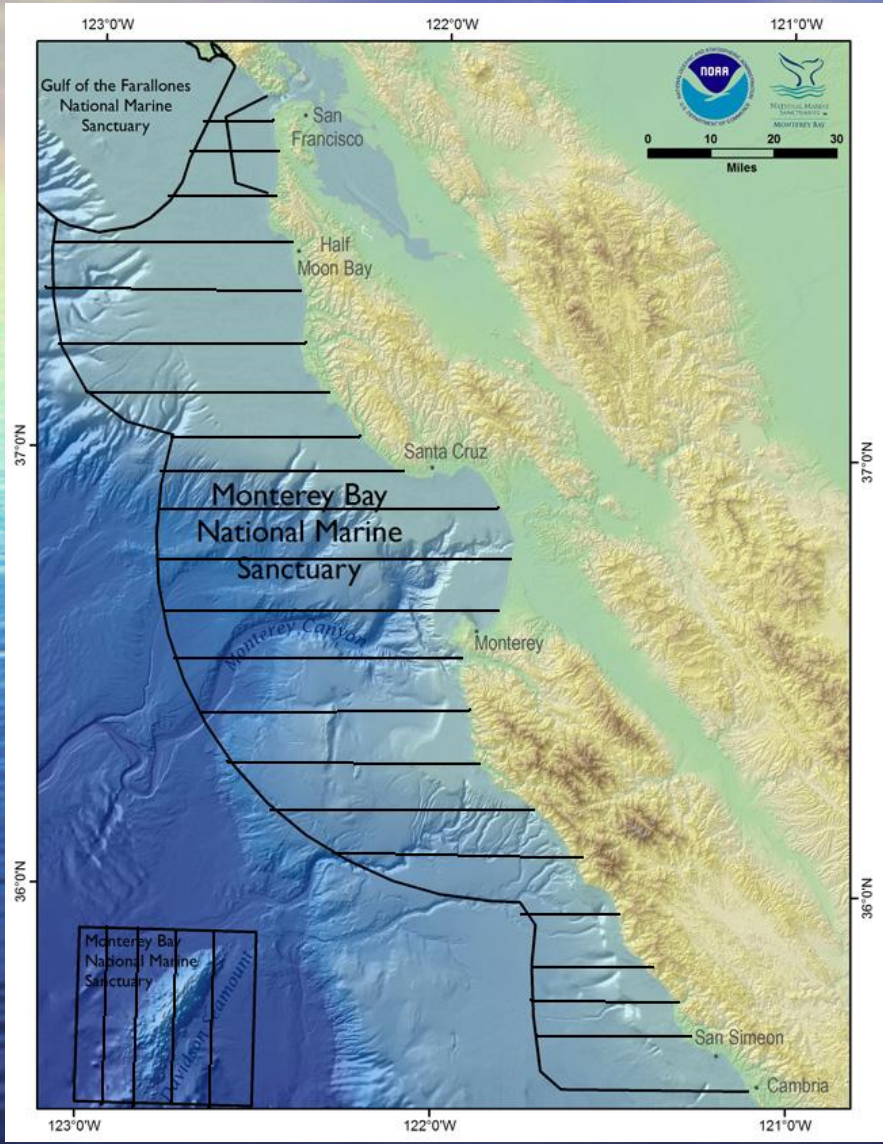

SANTA BARBARA COUNTY
VENTURA COUNTY
Point Conception
Santa Barbara Channel
San Miguel
Santa Rosa
Santa Cruz
Anacapa
N
0 2.5 5 10 Miles
0 2.5 5 10 Kilometers
2007 Sightings
2008 Sightings
Channel Islands
National Marine Sanctuary

ONMS Aircraft Requirements



- Living Marine Resource Surveys
- Vessel and Visitor Use Surveys
- Remote Sensing
- Enforcement
- Emergency Response
- Education/Outreach

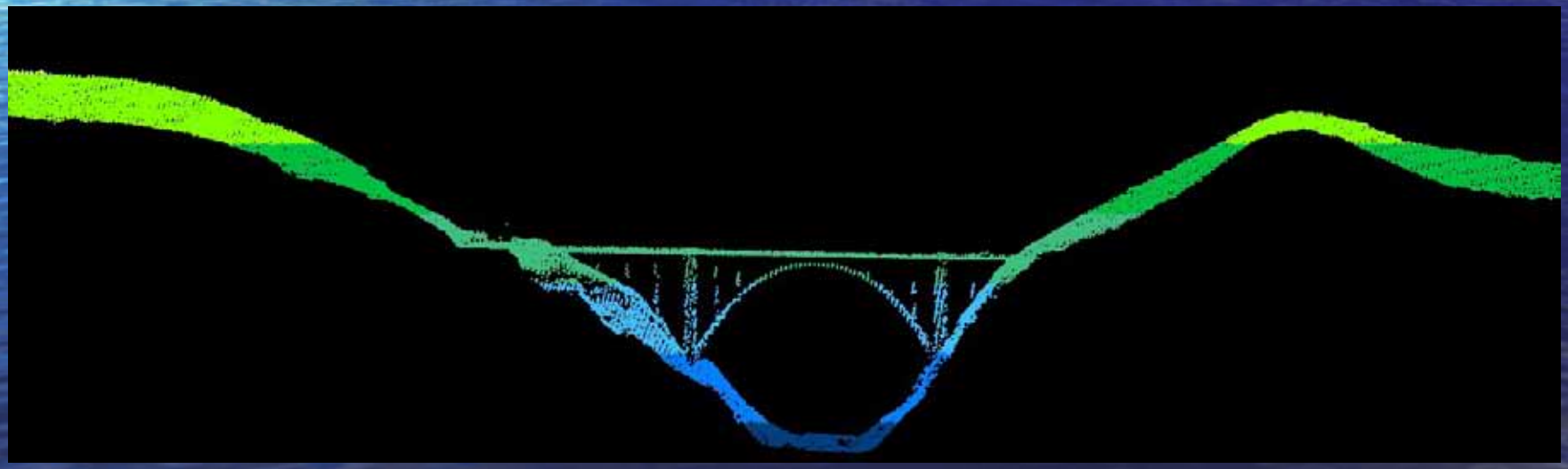
MBNMS Aircraft Requirements



- Monthly Visual Surveys
- Weekly Enforcement Flights
- Emergency Response
- 5-yr Remote Sensing Cycle

Regional Requirements

- MBNMS: 140 hrs ⇨ 320 hrs
- OCNMS: 80 hrs ⇨ 200 hrs
- GFNMS: 40 hrs ⇨ 120 hrs
- CBNMS: 30 hrs ⇨ 70 hrs
- CINMS: 350 hrs ⇨ 270 hrs



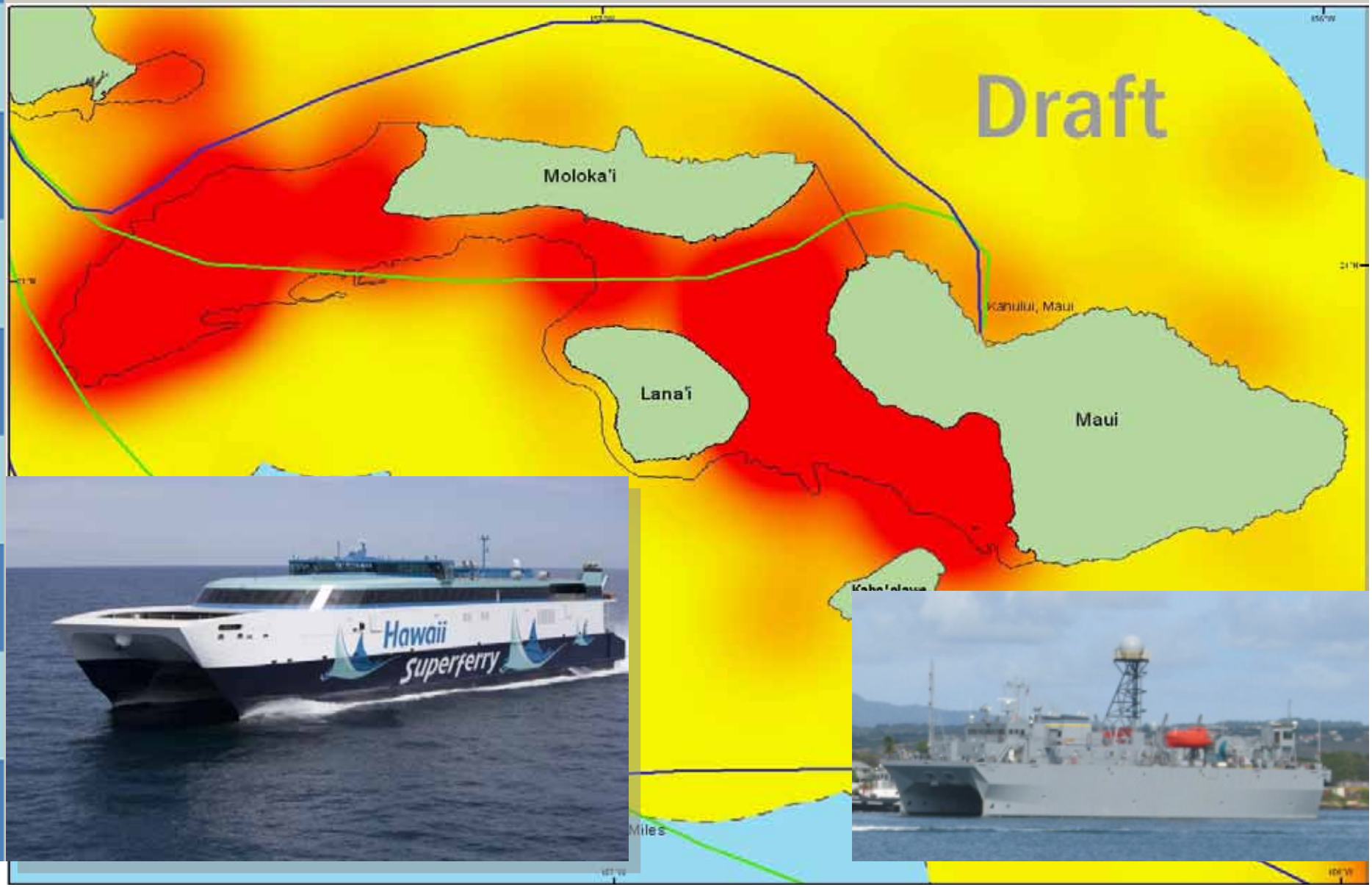
NOAA Twin Otter

A multi-mission platform to support
West Coast National Marine Sanctuaries

- Twin Engine Turboprop
- Long Endurance
- High Wing, Slow Speed
- Dual Bubble Observer Windows
- Belly Camera and Instrument Port

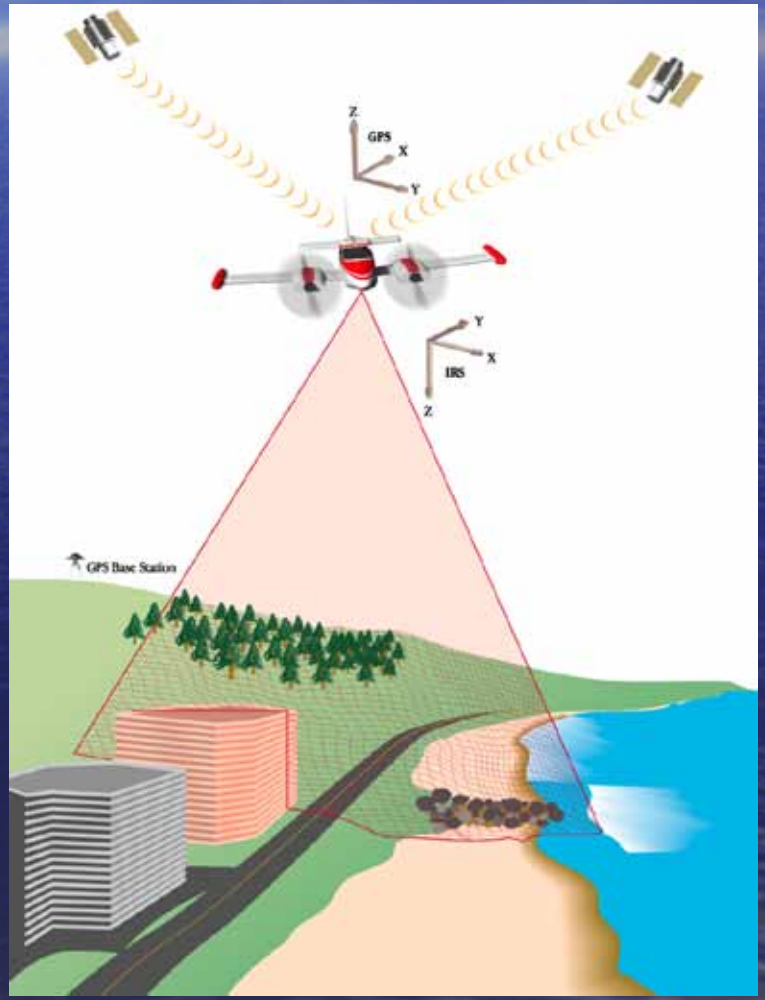
Hawaiian Islands Humpback Whale

Living Marine Resource Surveys



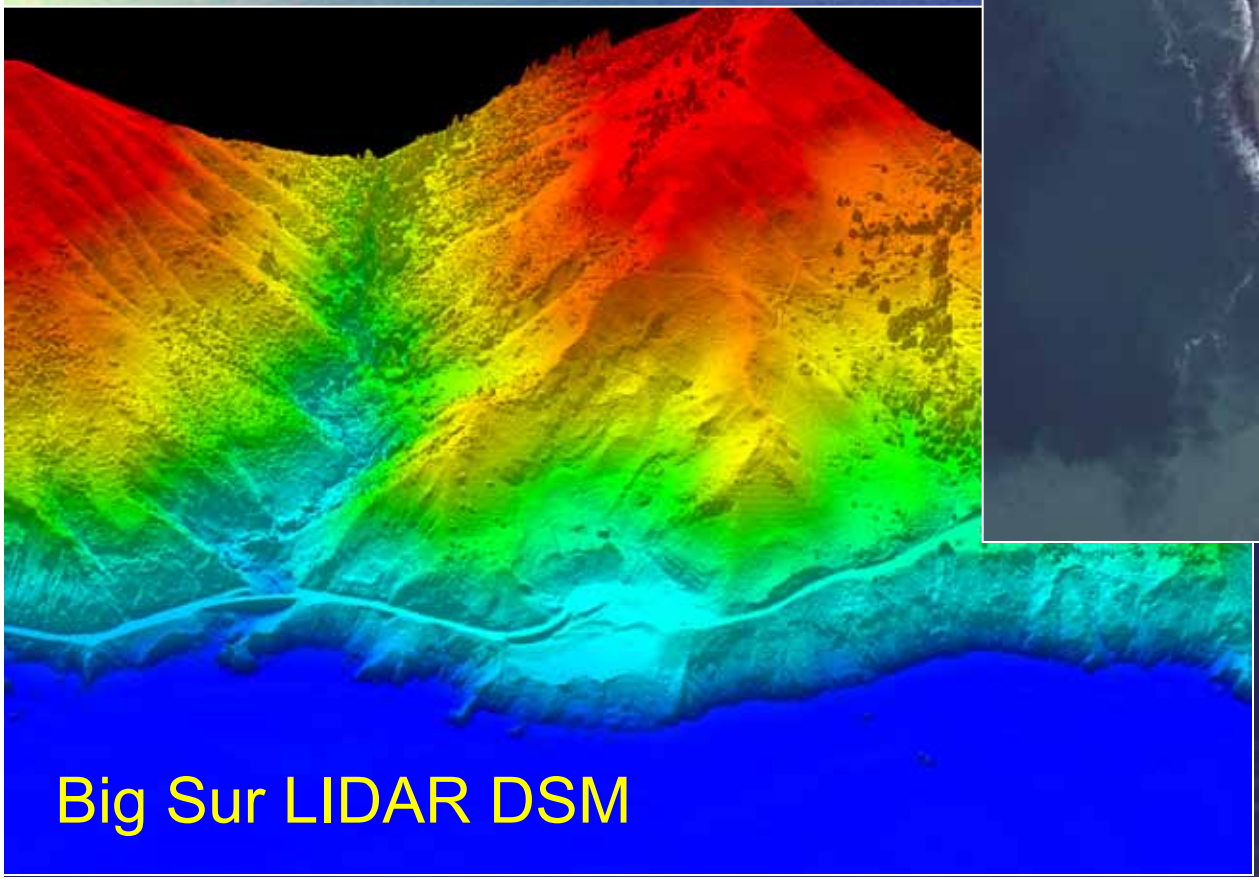
Remote Sensing

- Topographical LIDAR
- Hyperspectral Scanner
- Digital Camera
- Bathymetric LIDAR
- Thermal Sensors



ONMS Remote Sensing

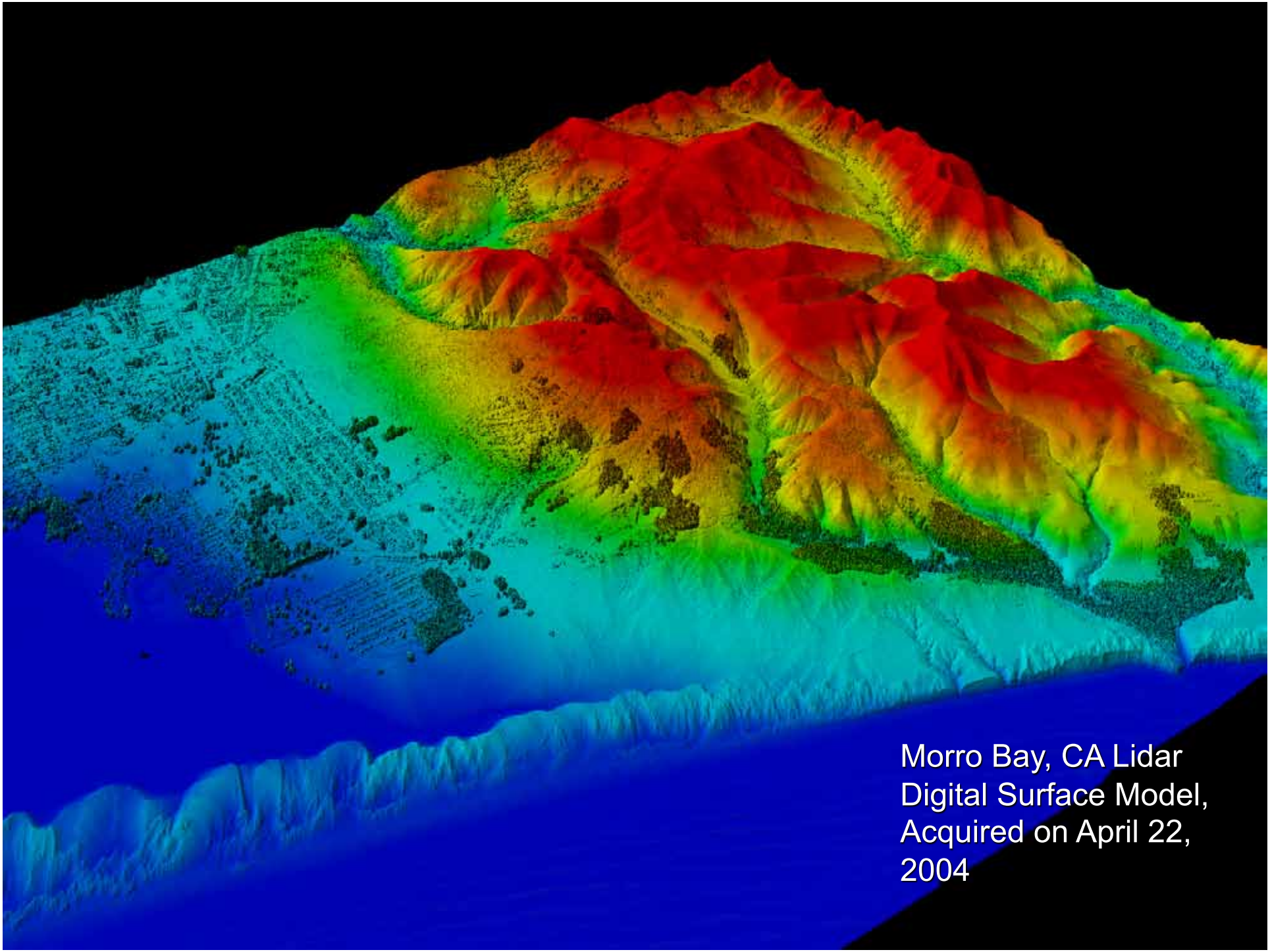
- Watershed Analysis
- Coastal Erosion
- Sea Level Rise

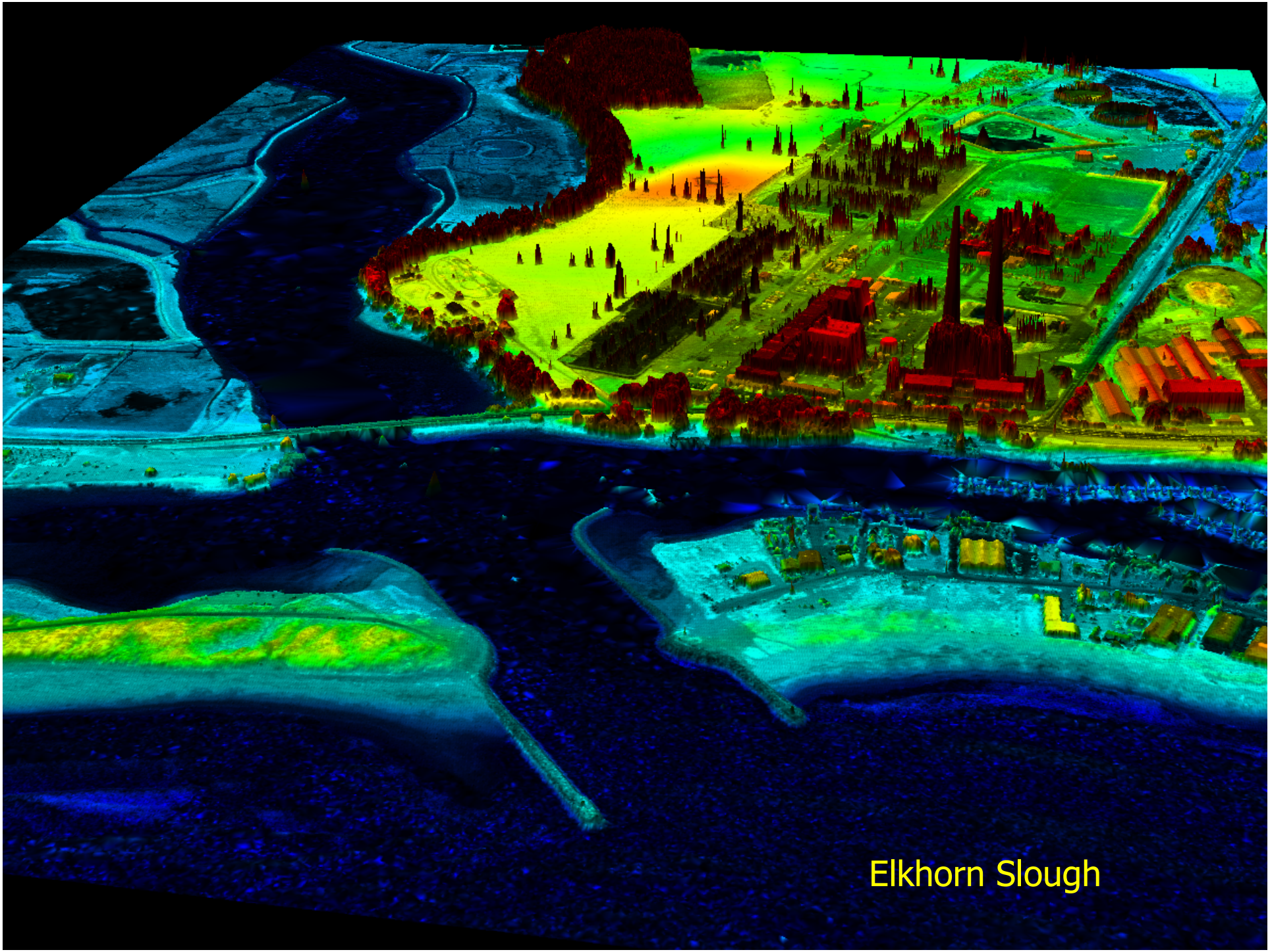


Big Sur LIDAR DSM

Big Sur Digital Imagery

Data acquired on April 25, 2004

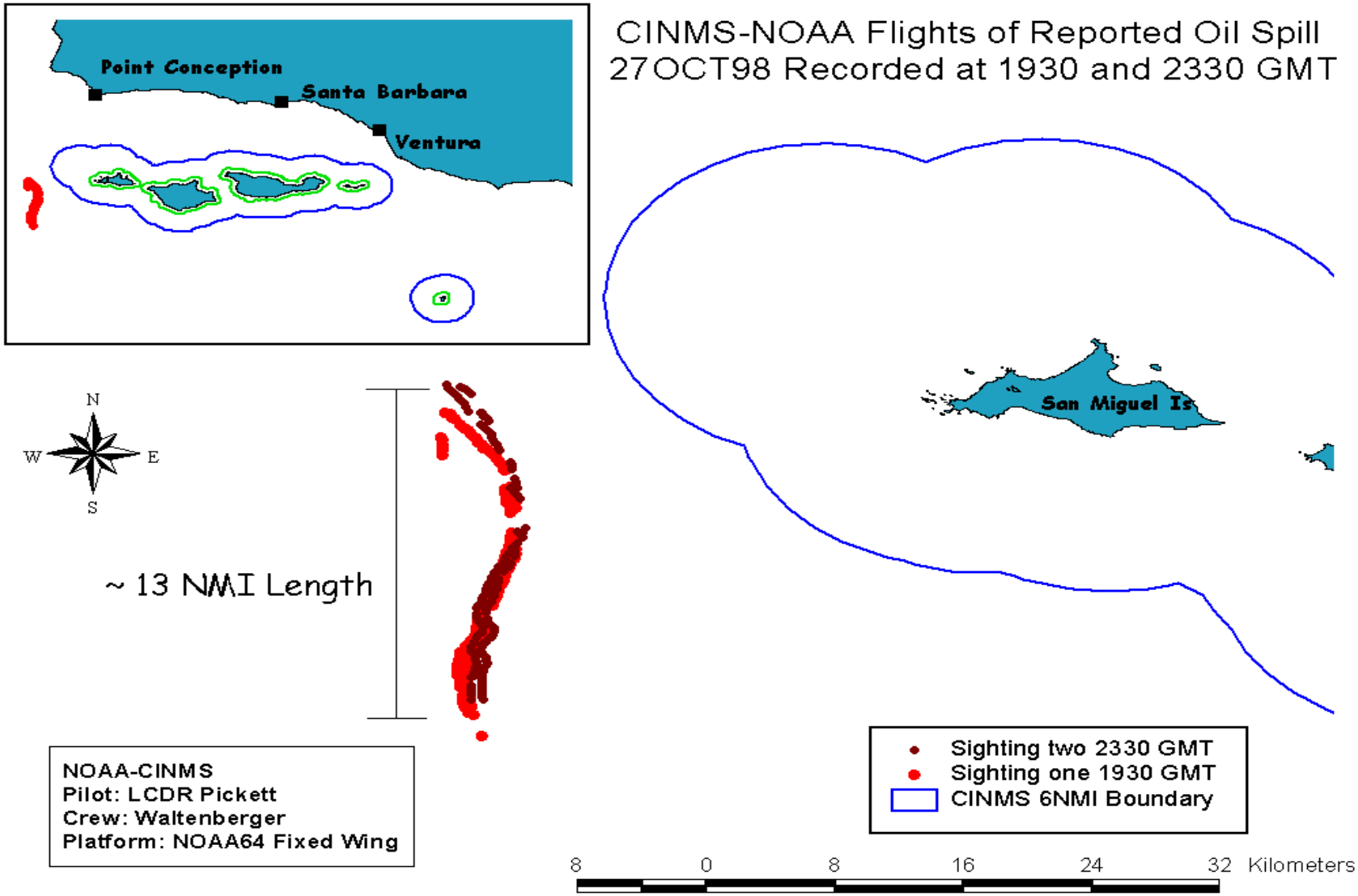

Morro Bay, CA Lidar
Digital Surface Model,
Acquired on April 22,
2004


Elkhorn Slough

ONMS Aerial Enforcement

- Ongoing Evaluation
- Support for USCG and CDF&G
- Marine Zone Enforcement
- Shipping Lanes
- Vessel Discharge, No-Anchoring
- Overflight Restrictions

Emergency Response



Education and Outreach

Pacific Dream Machine Airshow 2008
Half Moon Bay Airport

Next Steps

- Update Data Collection Software
- Finalize Survey Protocols with RCs
- Finalize site enforcement requirements
- Develop Pool of Trained Observers

Bringing existing NOAA resources and expertise to National Marine Sanctuaries
Questions?