



A regional framework for an
MPA network in Am. Samoa



You are
here

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What is an appropriate biological network in our SP region ?

1. MPA networks make biological sense.
2. Island connectivity through fish egg & larval dispersal.
 - (a) Almost all reef fish have a pelagic stage.
 - (b) Periodic replenishment is essential to maintain coral reef populations.
 - sources: local & transported
 - (c) What are ocean current patterns in S. Pacific?

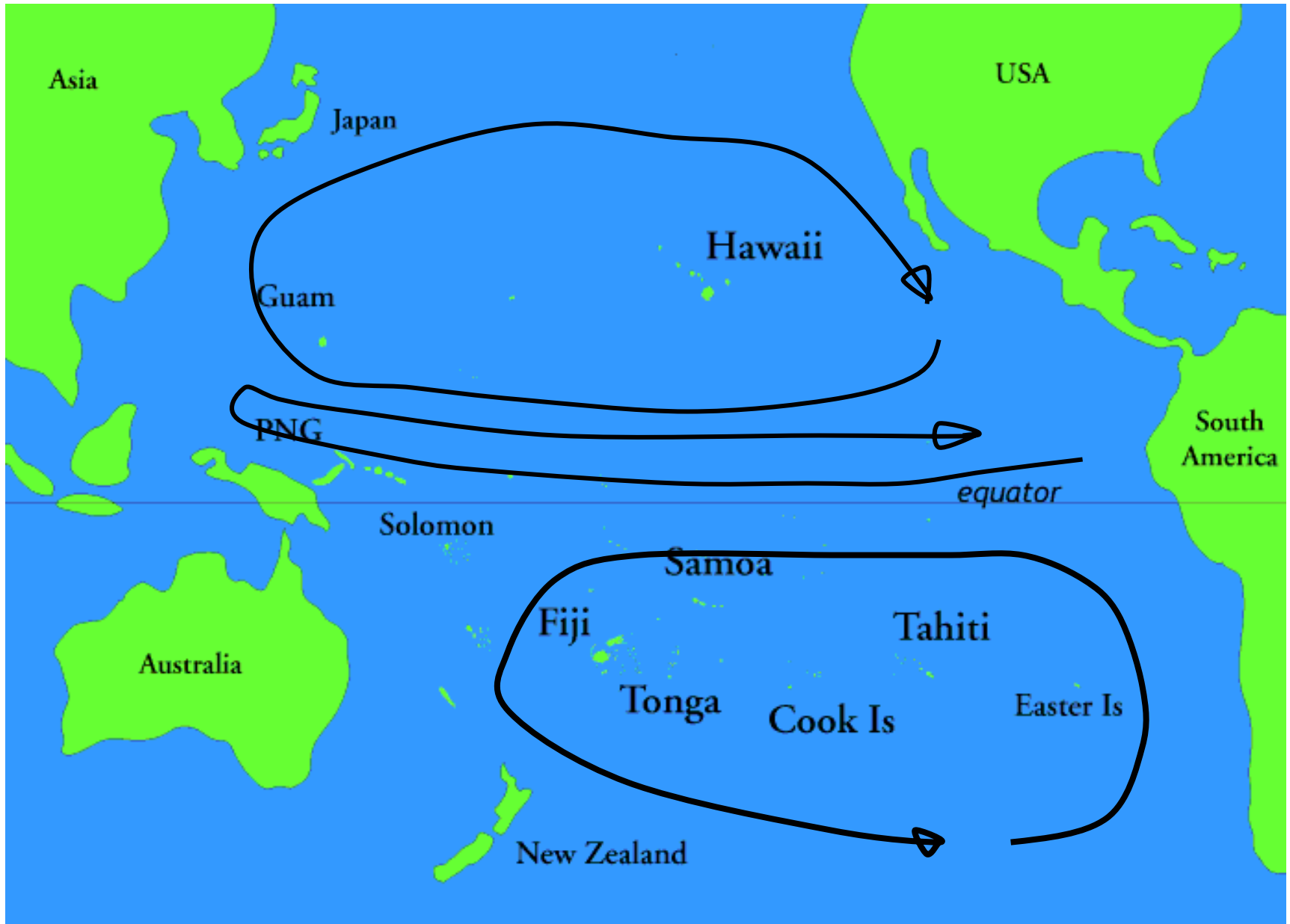
A large school of surgeonfish, likely Surge wrasse, is shown swimming over a rocky reef at dusk. The fish are densely packed, with many displaying a pattern of white spots on their heads and bodies, and others showing vertical stripes. The water is dark blue, and the reef below is illuminated with a soft, purple and blue light. The text "BROADCAST SPAWNERS (SURGEONFISH AT DUSK)" is overlaid in the bottom left corner.

**BROADCAST
SPAWNERS
(SURGEONFISH
AT DUSK)**

What is an appropriate biological network in our SP region ?

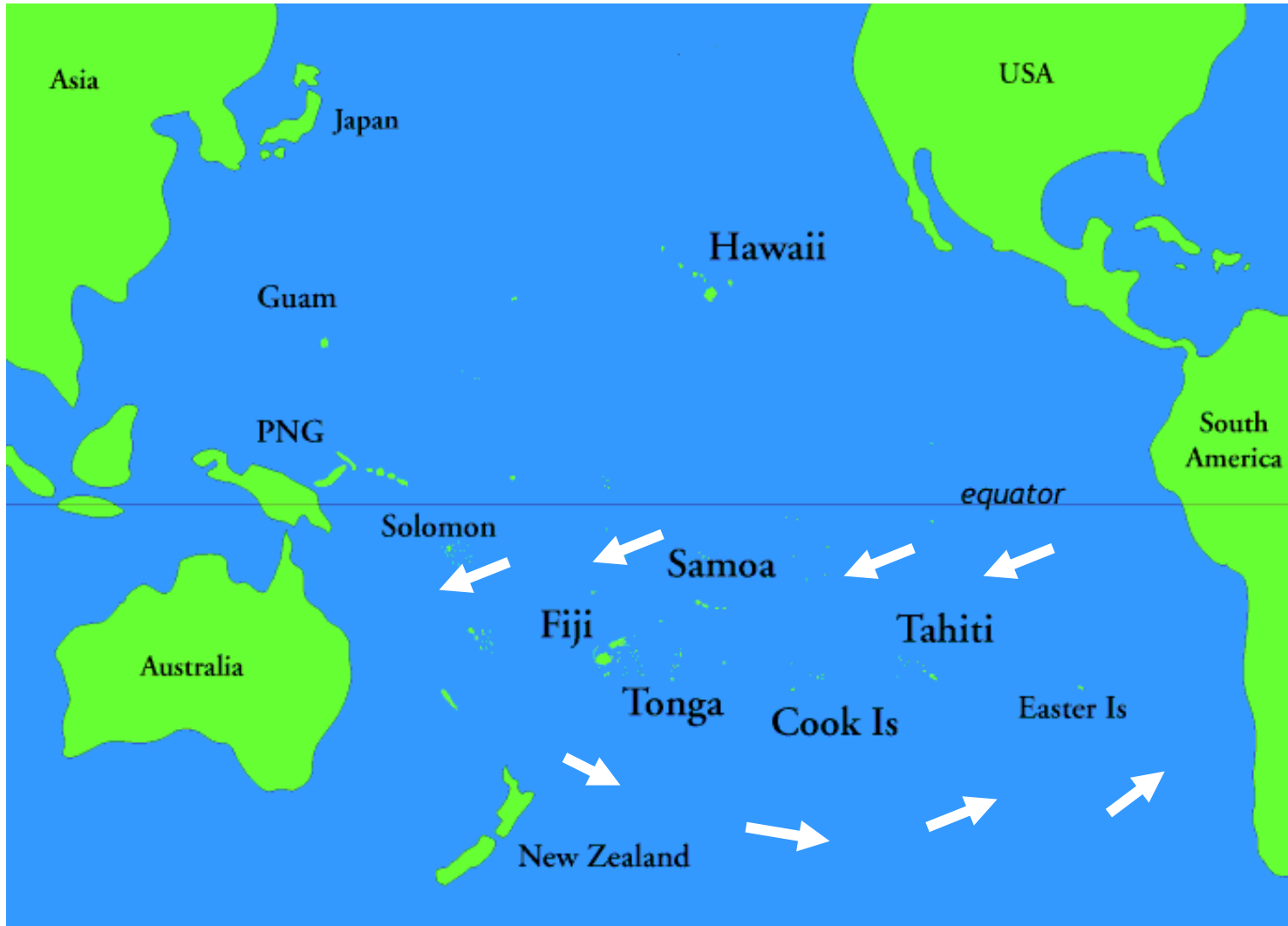
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Ocean currents: North vs South

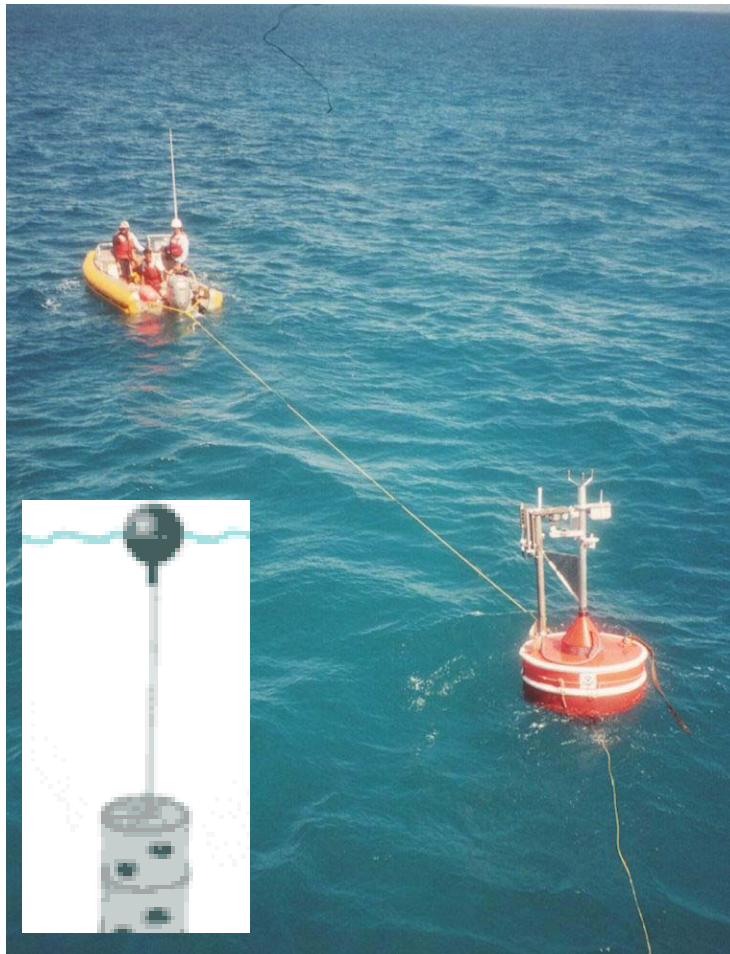


Ocean currents

1. Southern equatorial current
2. 1000's of small islands
3. Larval conveyor belt?



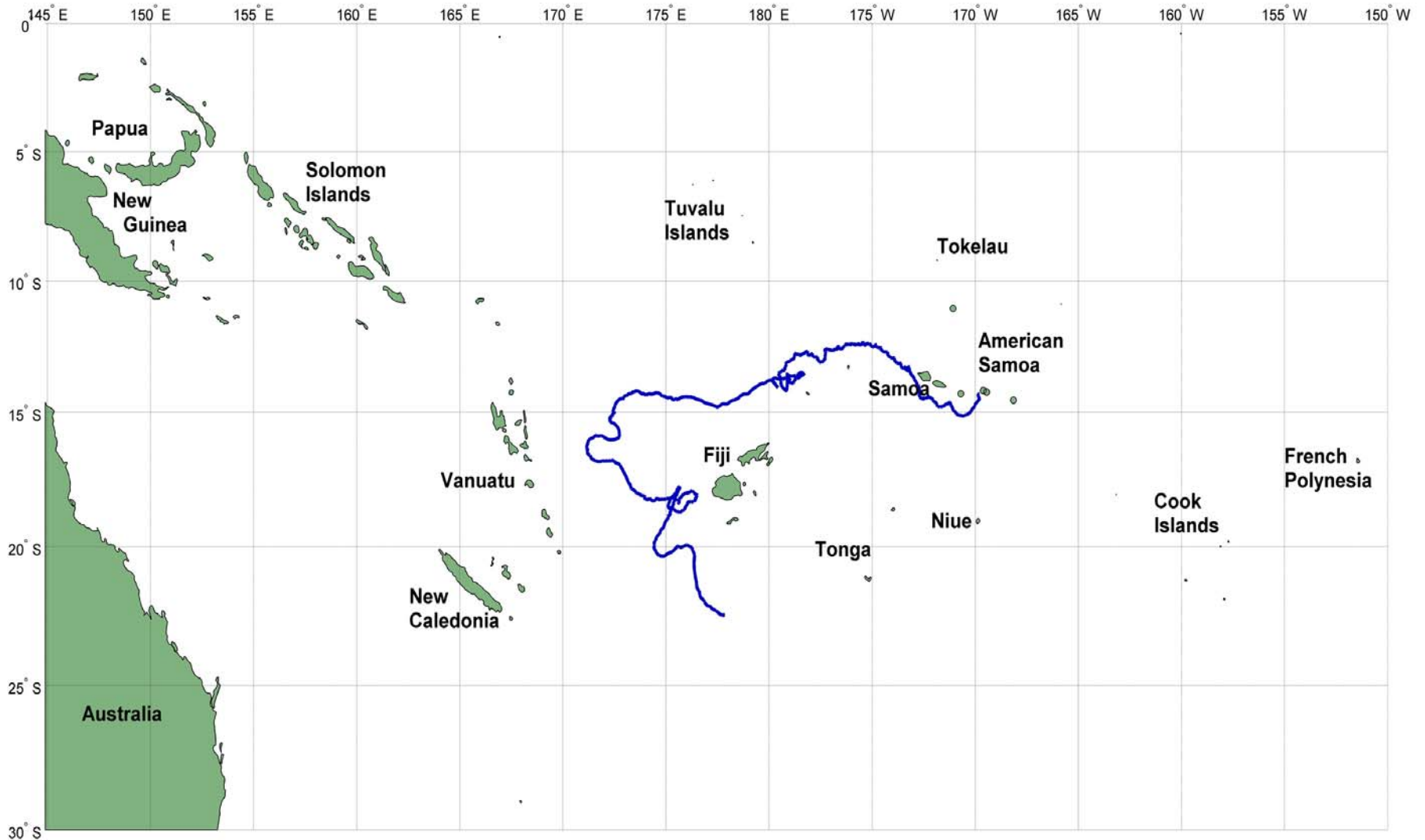
Sea surface drifter with satellite transponder (NOAA)



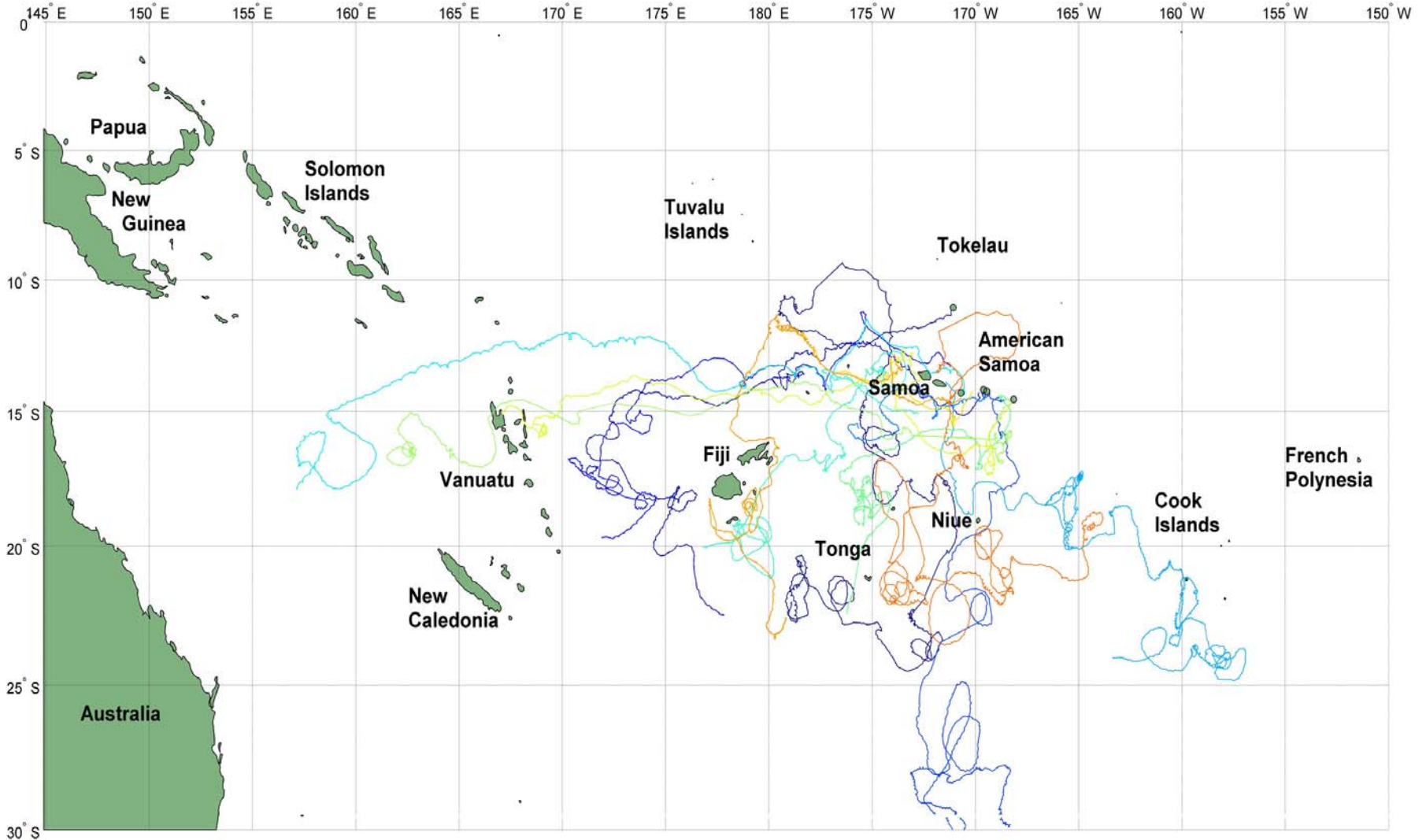
-Wealth of data about ocean currents in our area.

-20 releases over 3 years, 2 seasons.

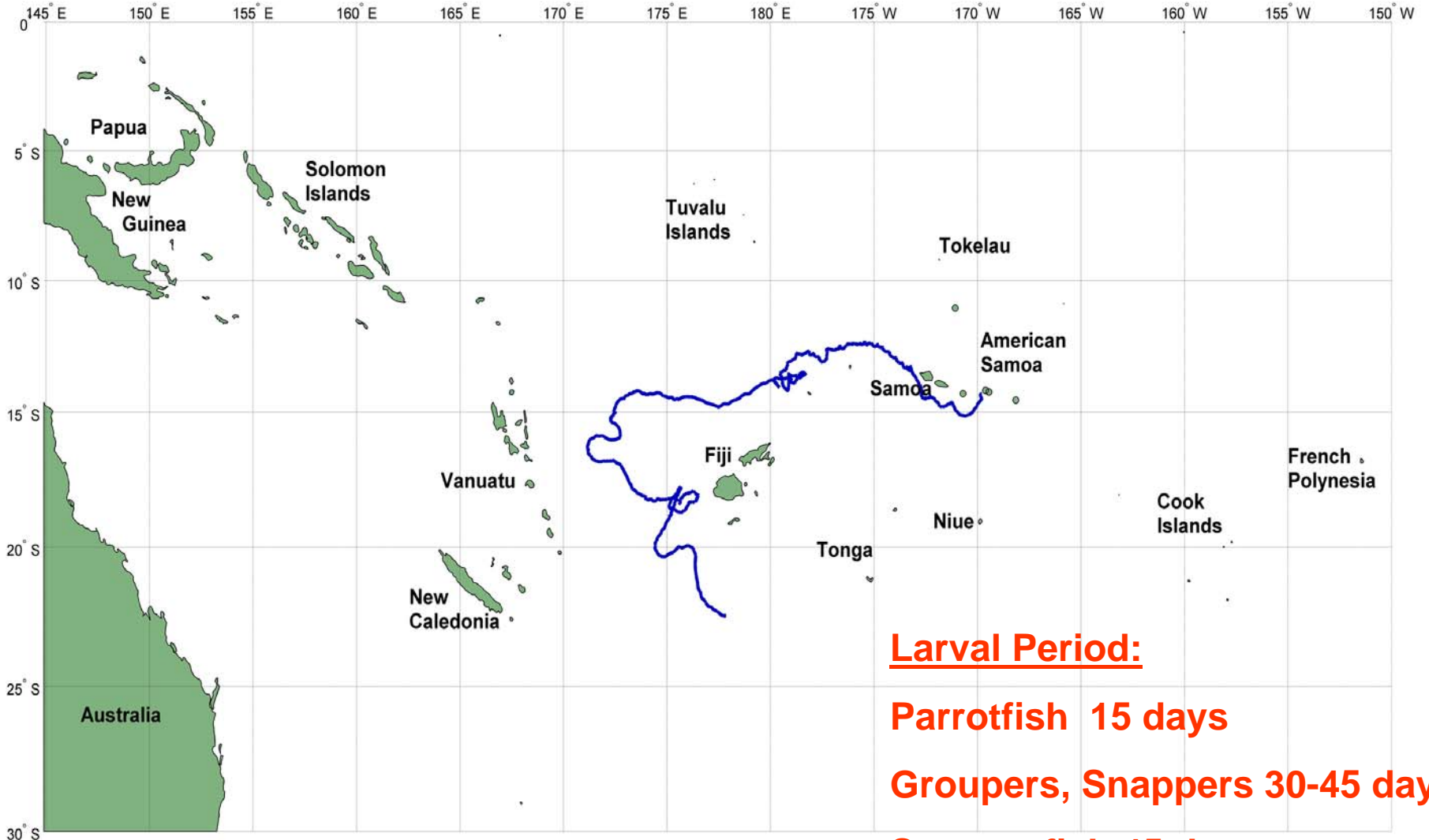
Drifter track (12 months)



Drifter tracks (12 months)



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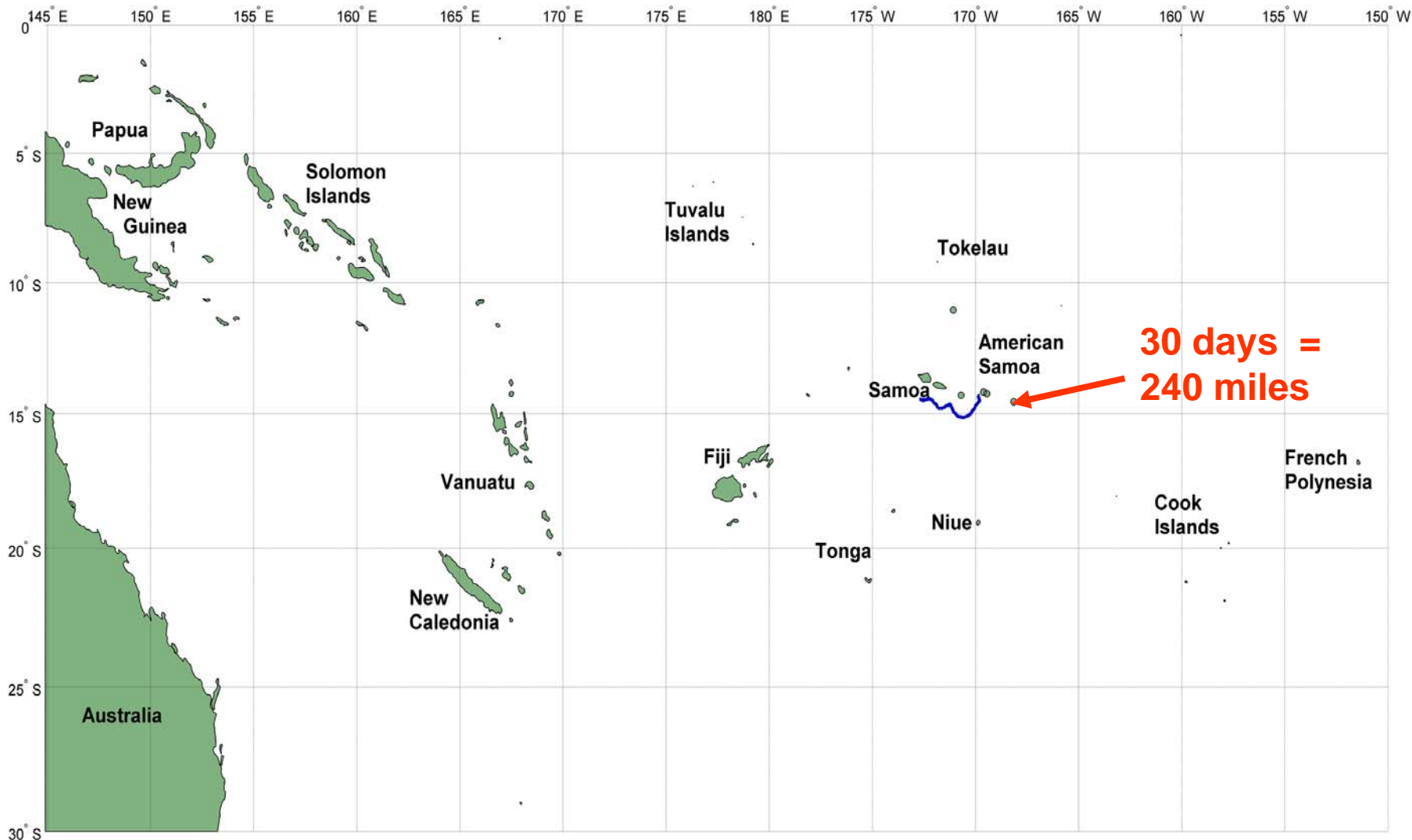
Larval Period:

Parrotfish 15 days

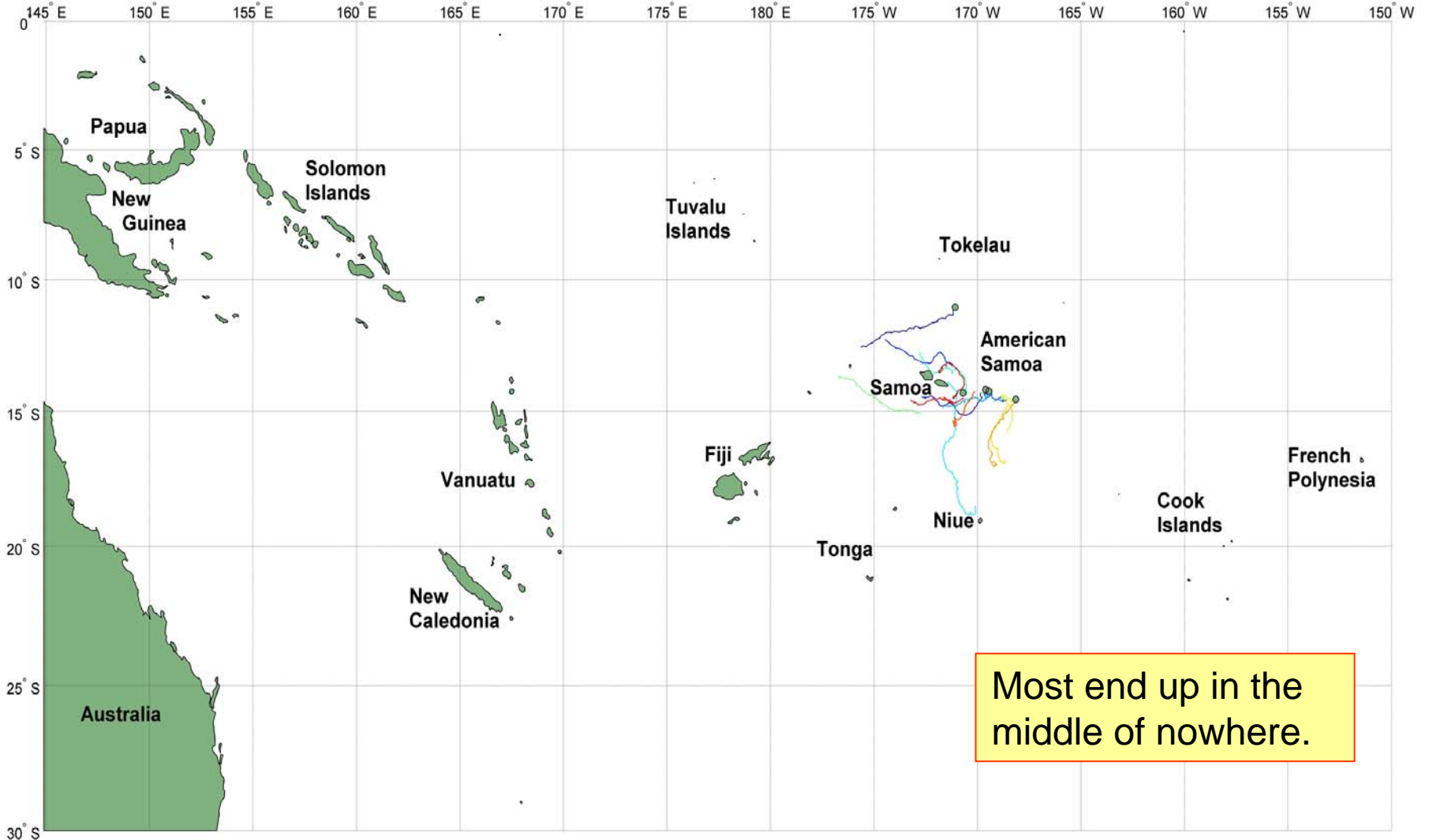
Groupers, Snappers 30-45 days

Surgeonfish 45 days

Drifter tracks (30 days, 8 miles/day = 240 miles)



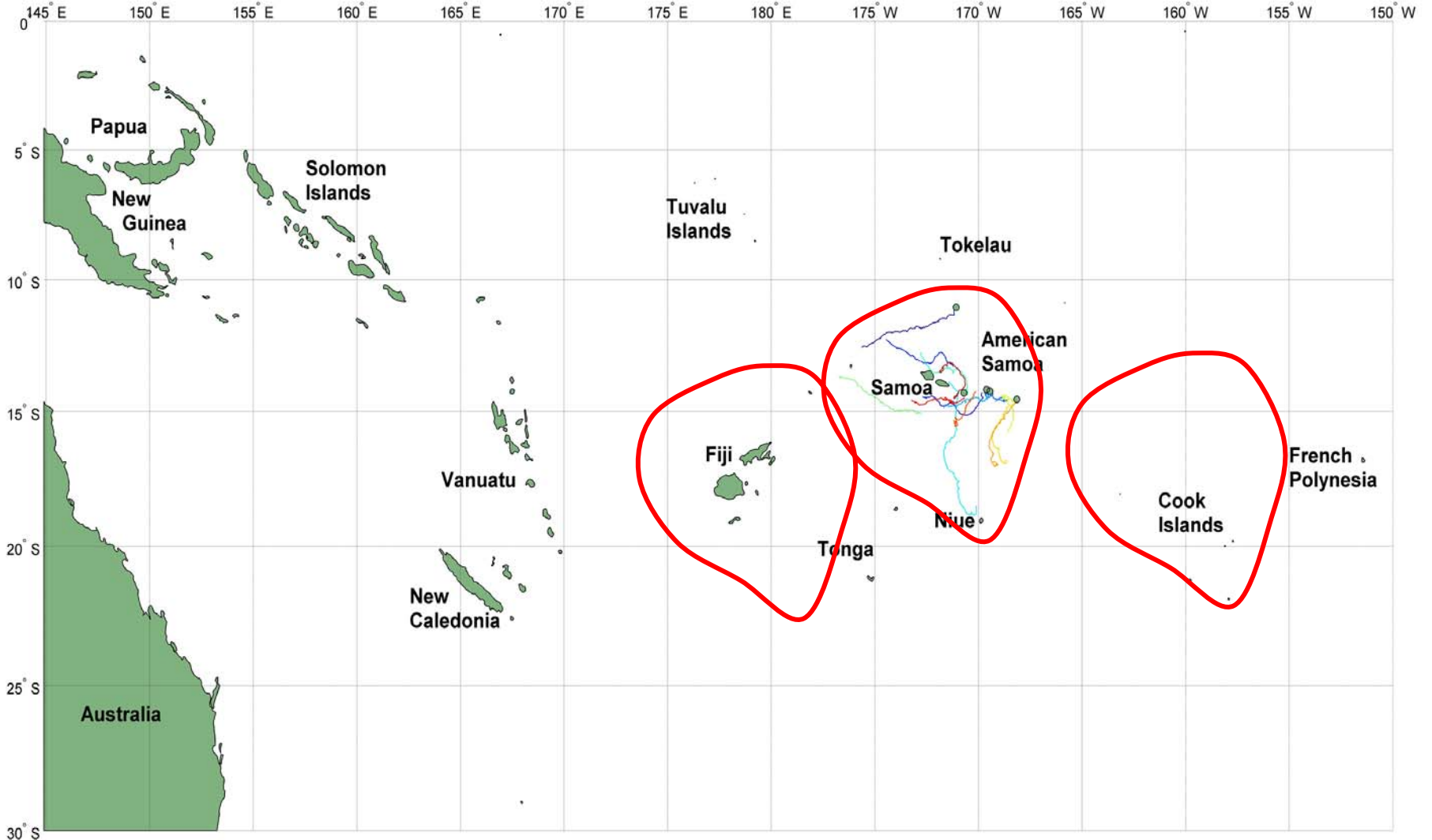
Drifter tracks (30 days)



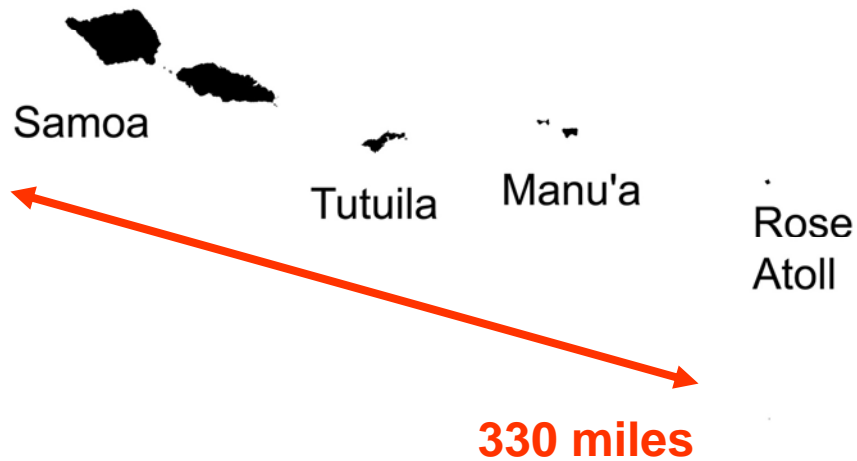
Drifter tracks (30 days)



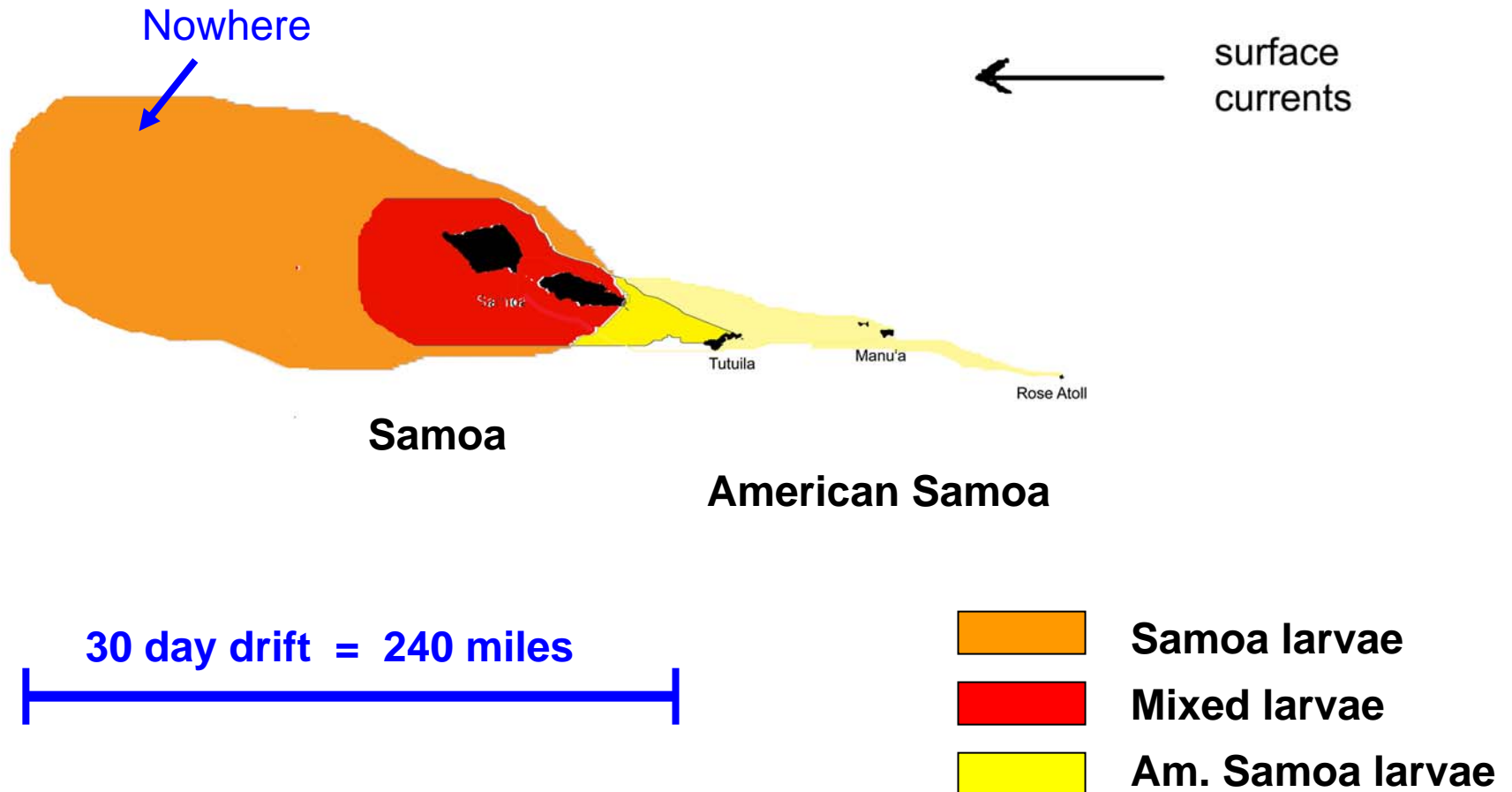
MAIN SOURCES OF FISH LARVAE



SAMOAN ARCHIPELAGO



Connectivity schematic



Connectivity schematic



Samoa larvae

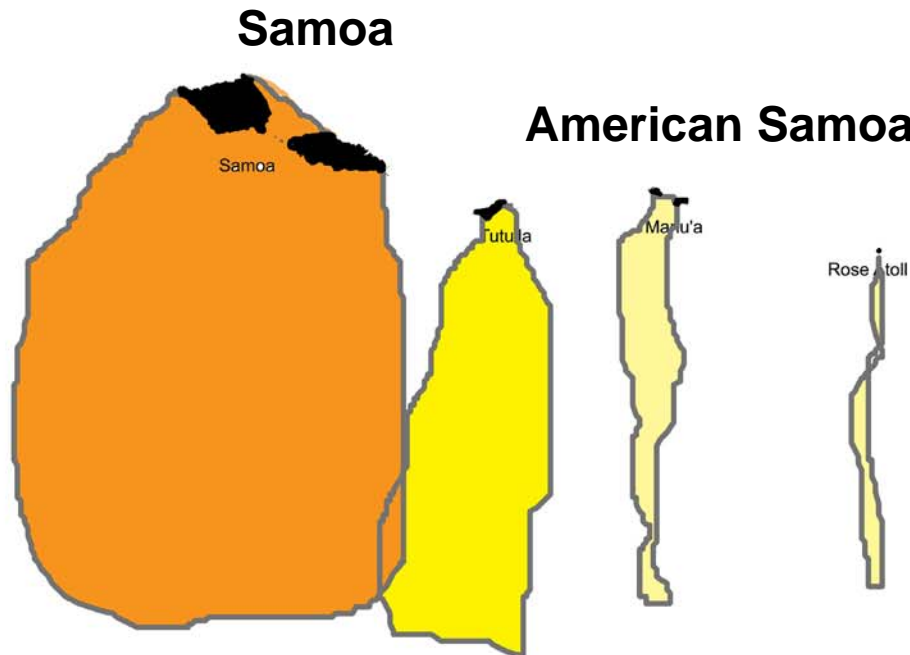


Mixed larvae



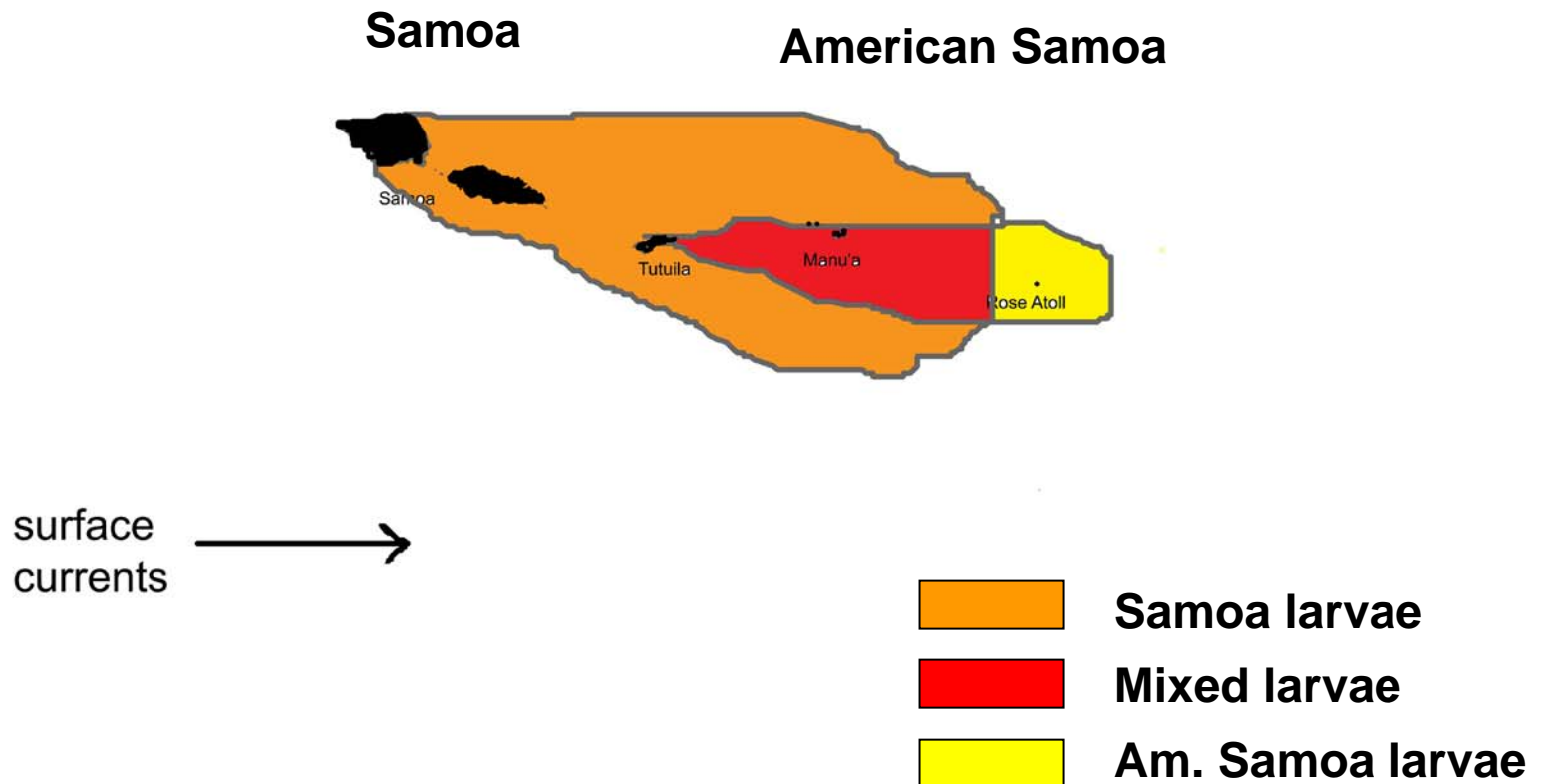
Am. Samoa larvae

surface
currents



Long life span
needed to
survive low
recruitment

Connectivity schematic



Samoa Archipelago

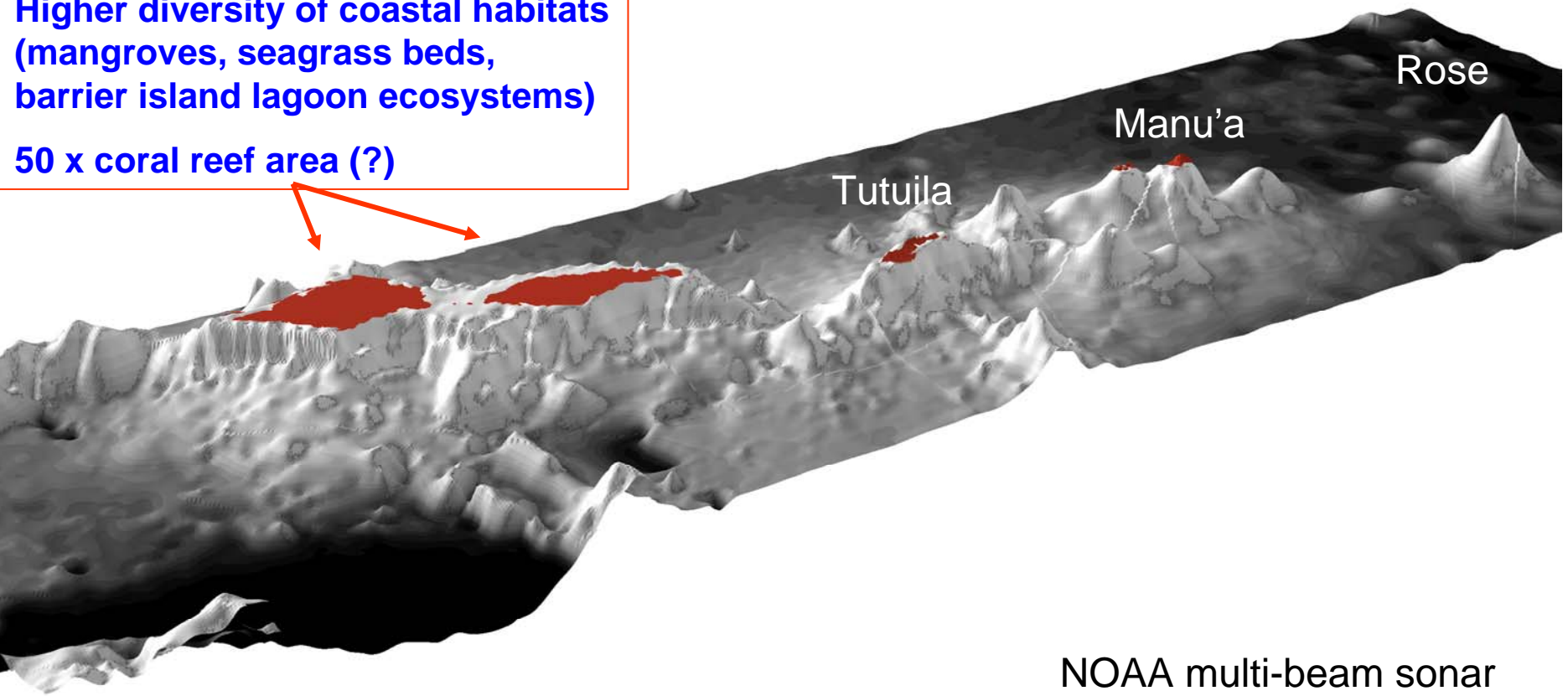
(bathymetric perspective emphasizes importance of Samoa)

Samoa Connection

15 x land mass,

Higher diversity of coastal habitats
(mangroves, seagrass beds,
barrier island lagoon ecosystems)

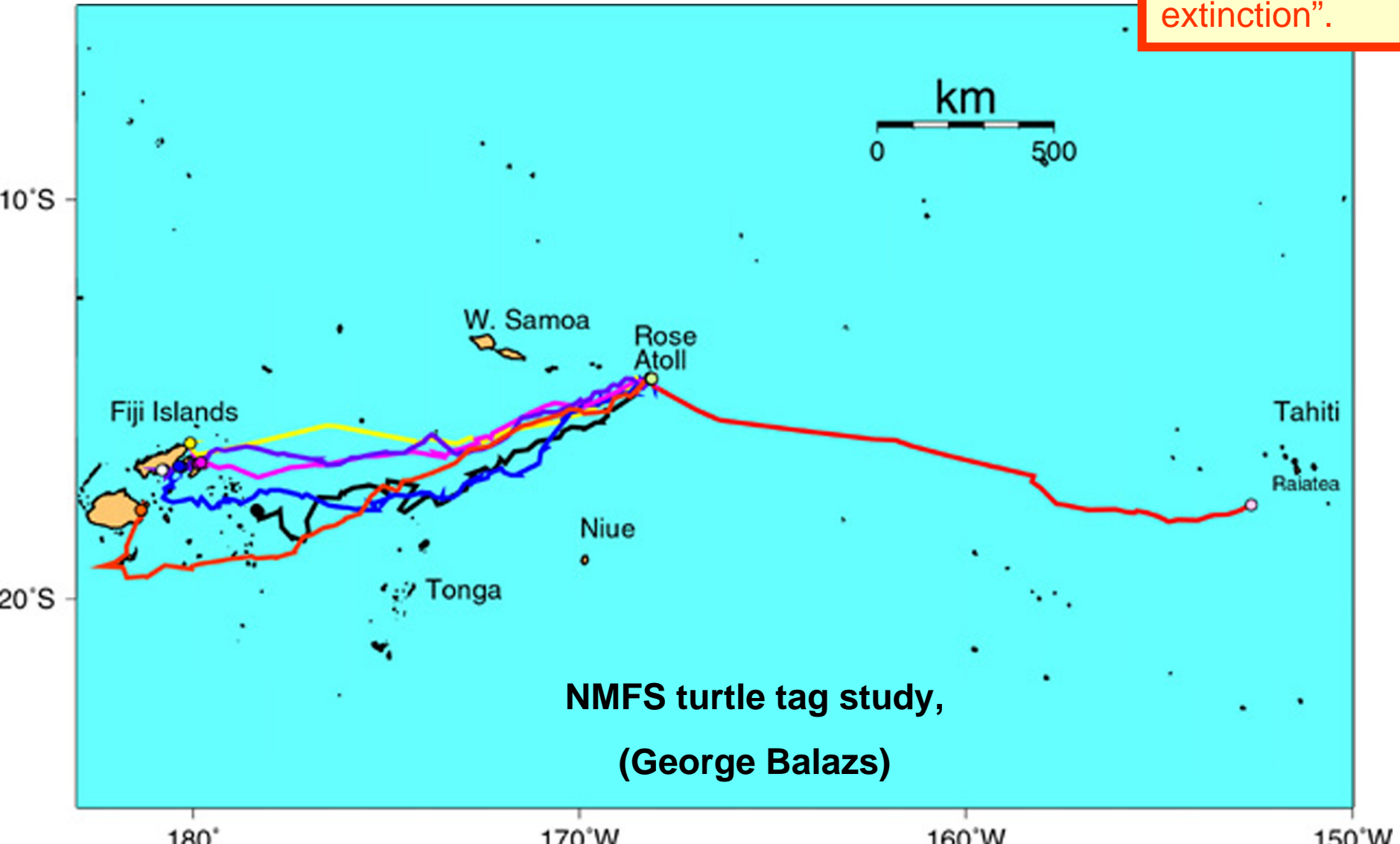
50 x coral reef area (?)



NOAA multi-beam sonar

Fiji, too – for sea turtles

Ecosystem component in “rapidly approaching extinction”.



Recommended Next Steps

1. Create checklist of key habitats (eg, fish spawning areas, seagrass beds, turtle nesting beaches, etc).
2. Inventory these habitats at each island in archipelago, **including** Traditional Ecological Knowledge.
3. Identify data gaps for MPA network funding strategy.
4. Add Samoa and Fiji to our network – they play vital roles in replenishing coral reefs in American Samoa.
5. Continue analysis of current drifter tracks (annual, seasonal trends) and other oceanographic data.

Data presented are from NOAA-CRED program.

Valuable products that help us understand the dynamics of American Samoa's coral reefs, with direct management value.

Other products:

Benthic habitat maps

Multi-beam bathymetry maps

Oceanographic: physical/chemical

Comprehensive fish & coral surveys

Reef "sounds" project

Coral hotspot website

Acknowledgements to CRTF, NOAA-CRED, and others !