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NATION NOW

Up to 20 million tons of tsunami debris headed for U.S. shores

October 24, 2011 | 4:53pm

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Do we have the plan?

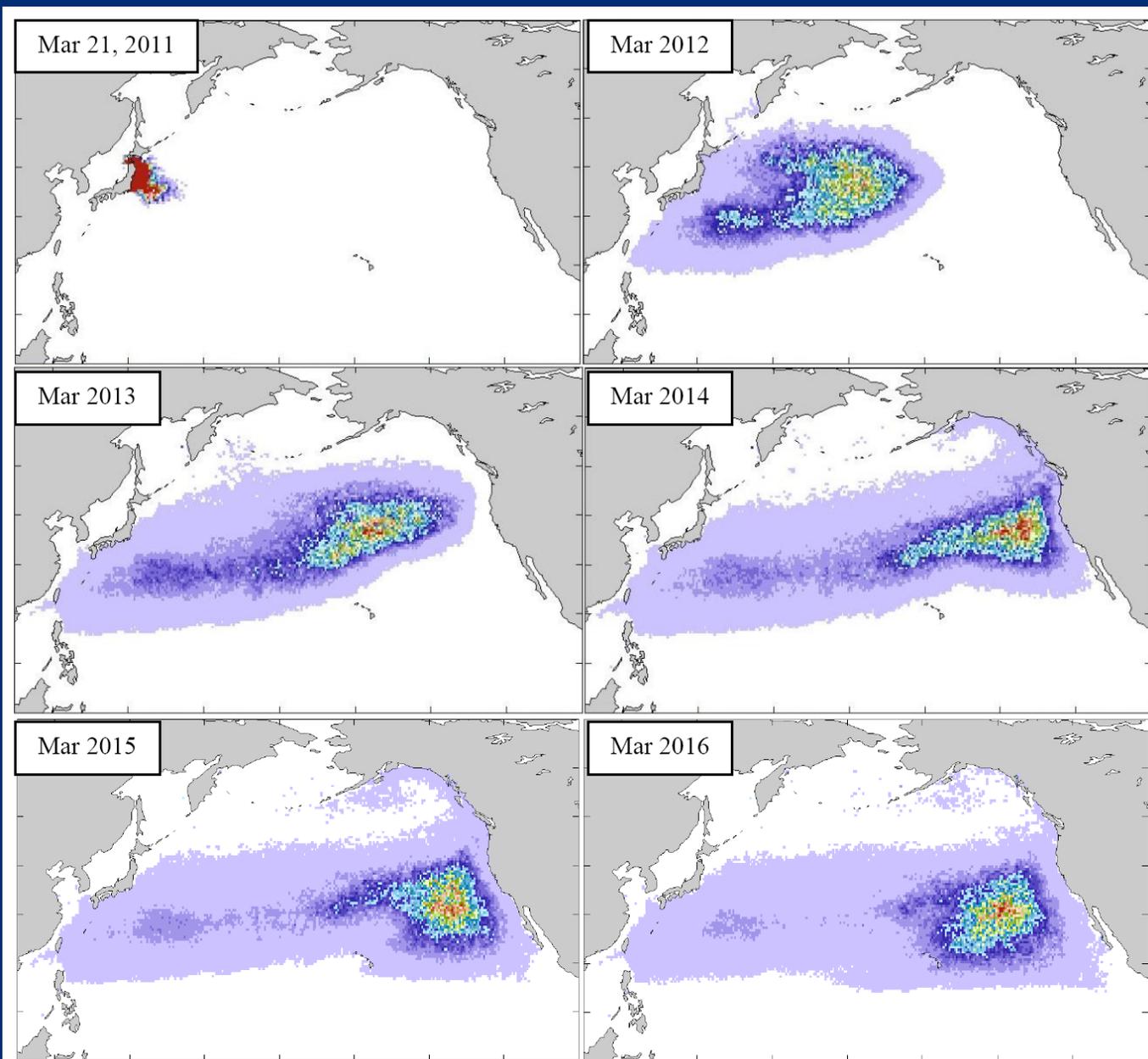
Cleaning millions of tons of debris scattered over huge area would be very difficult...

...but, fortunately,...

- only small part of tsunami debris will threaten coastlines during first years, before its main mass reaches the Garbage Patch

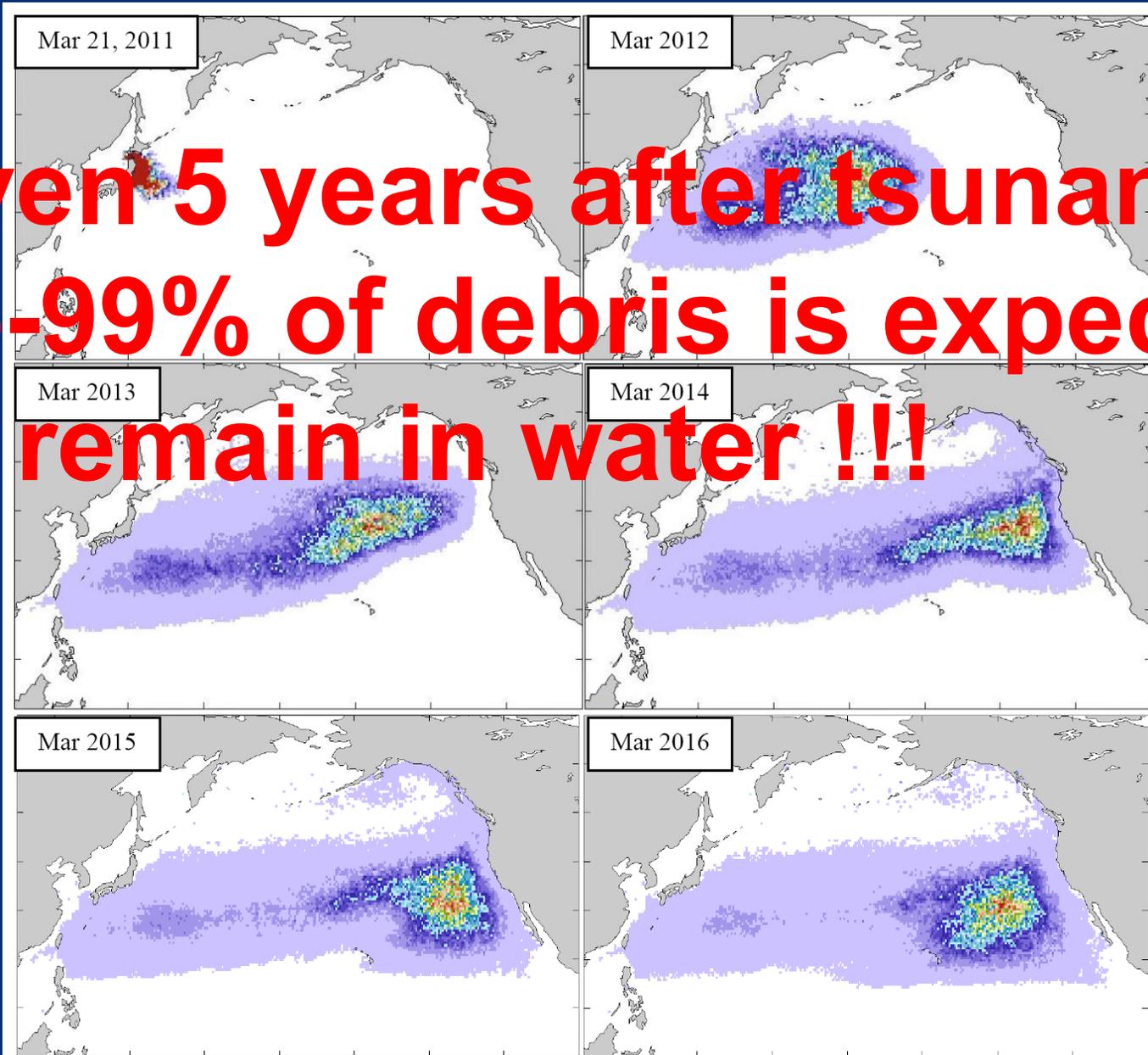
-debris, moving towards the coastlines, follows narrow, predictable pathways

Model simulation of tsunami debris movement

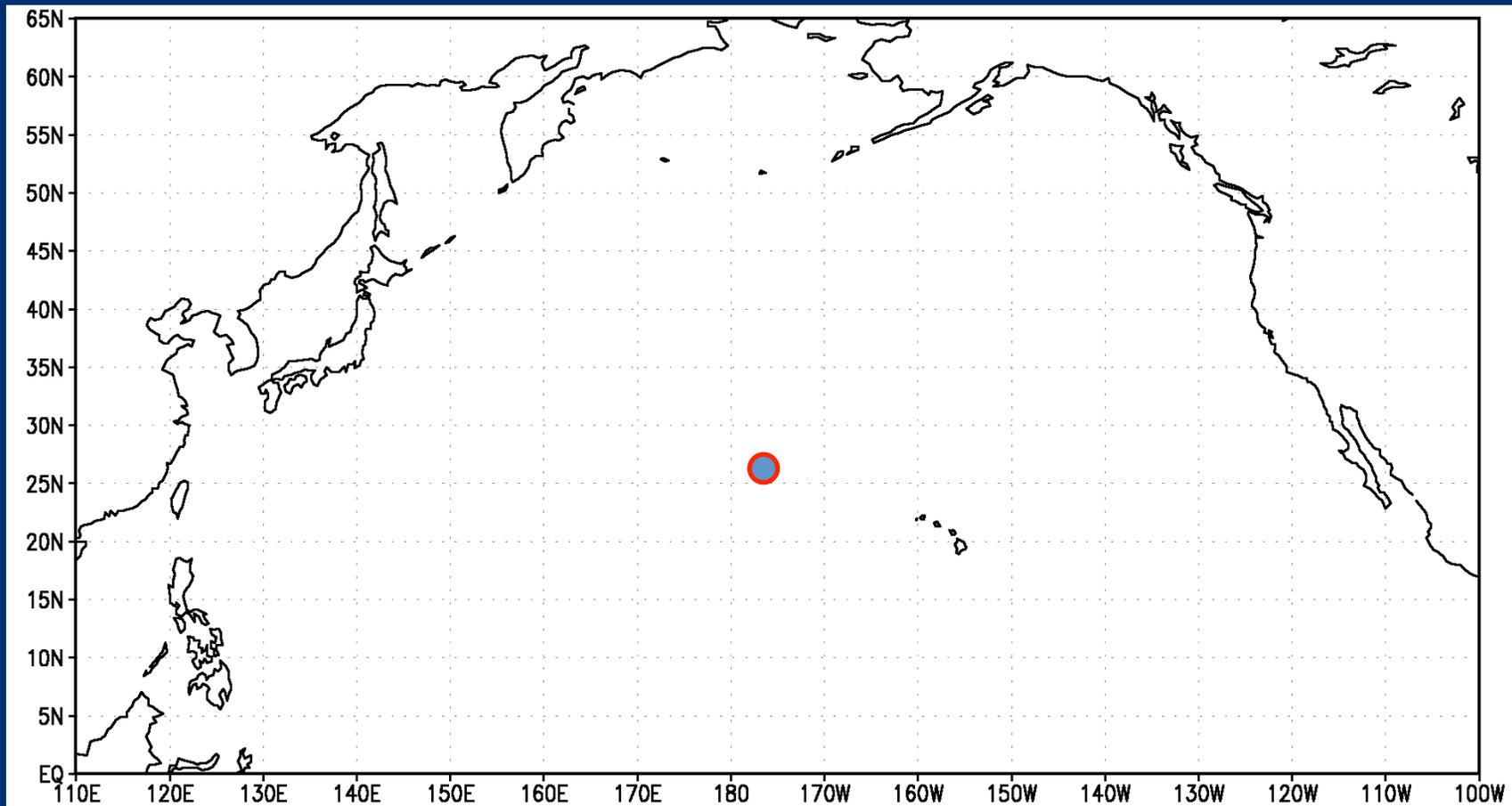


Model simulation of tsunami debris movement

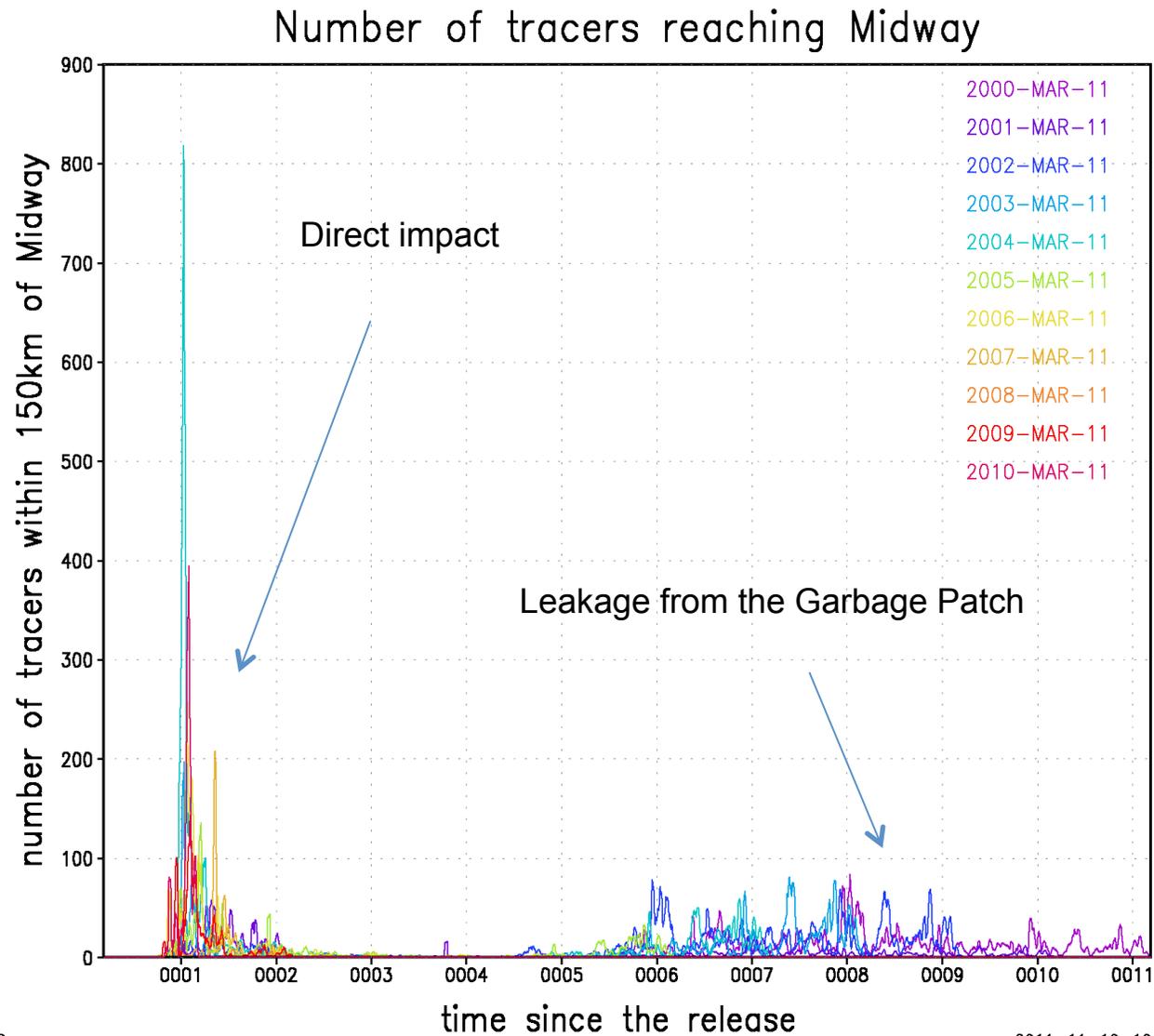
**Even 5 years after tsunami
95-99% of debris is expected
to remain in water !!!**



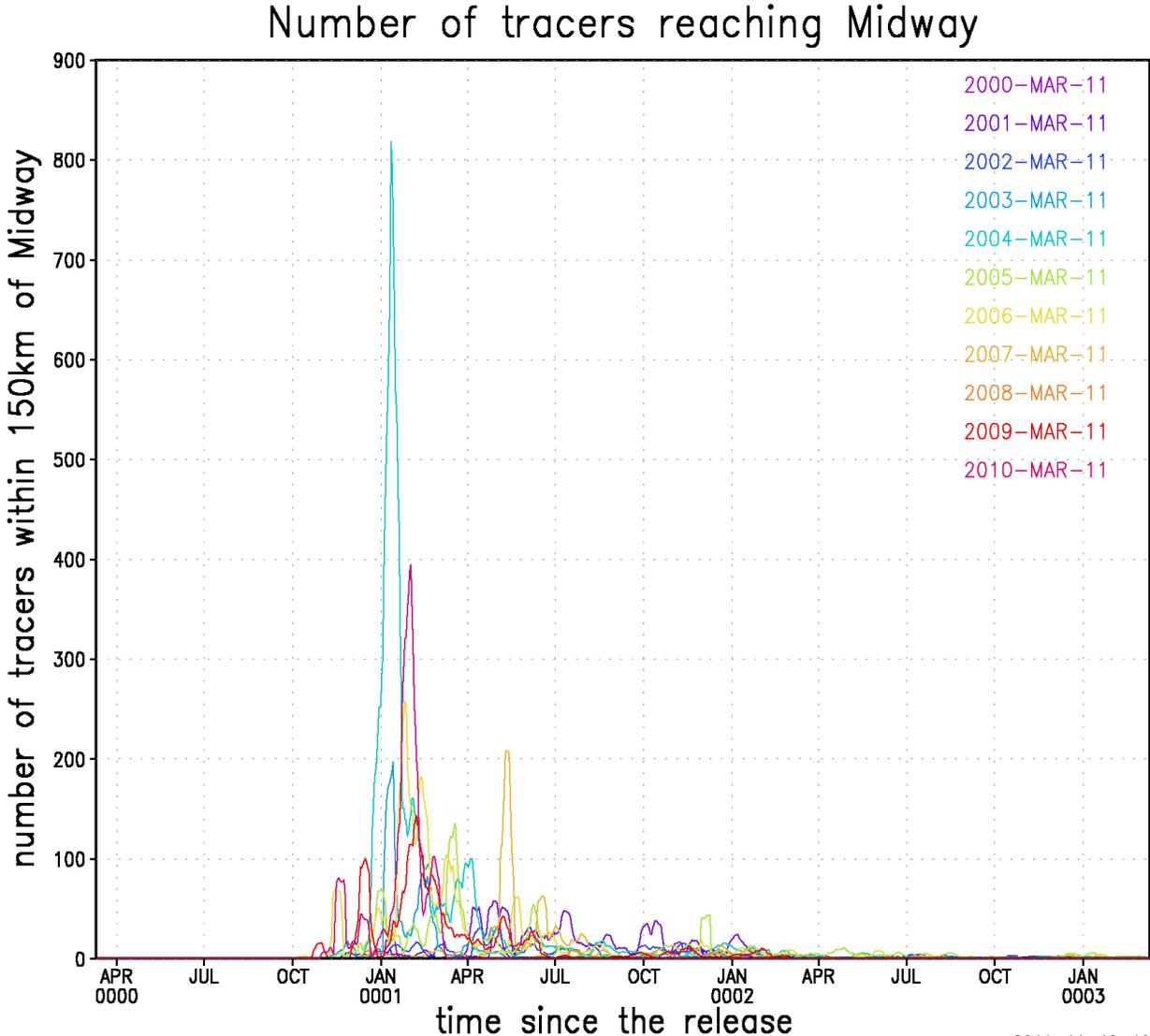
Midway Islands



Model flux of March 11 tsunami debris on Midway in different years

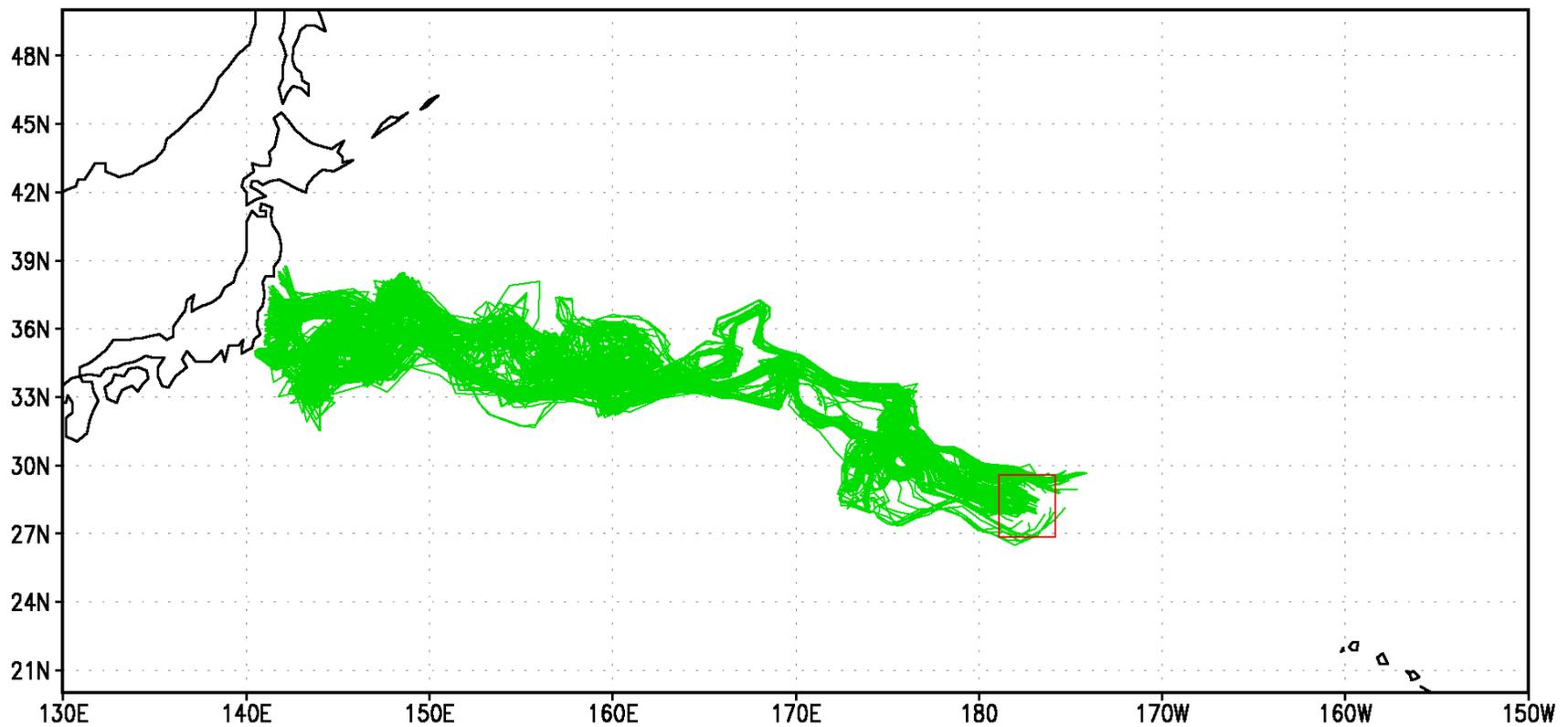


Model flux of March 11 tsunami debris on Midway in different years



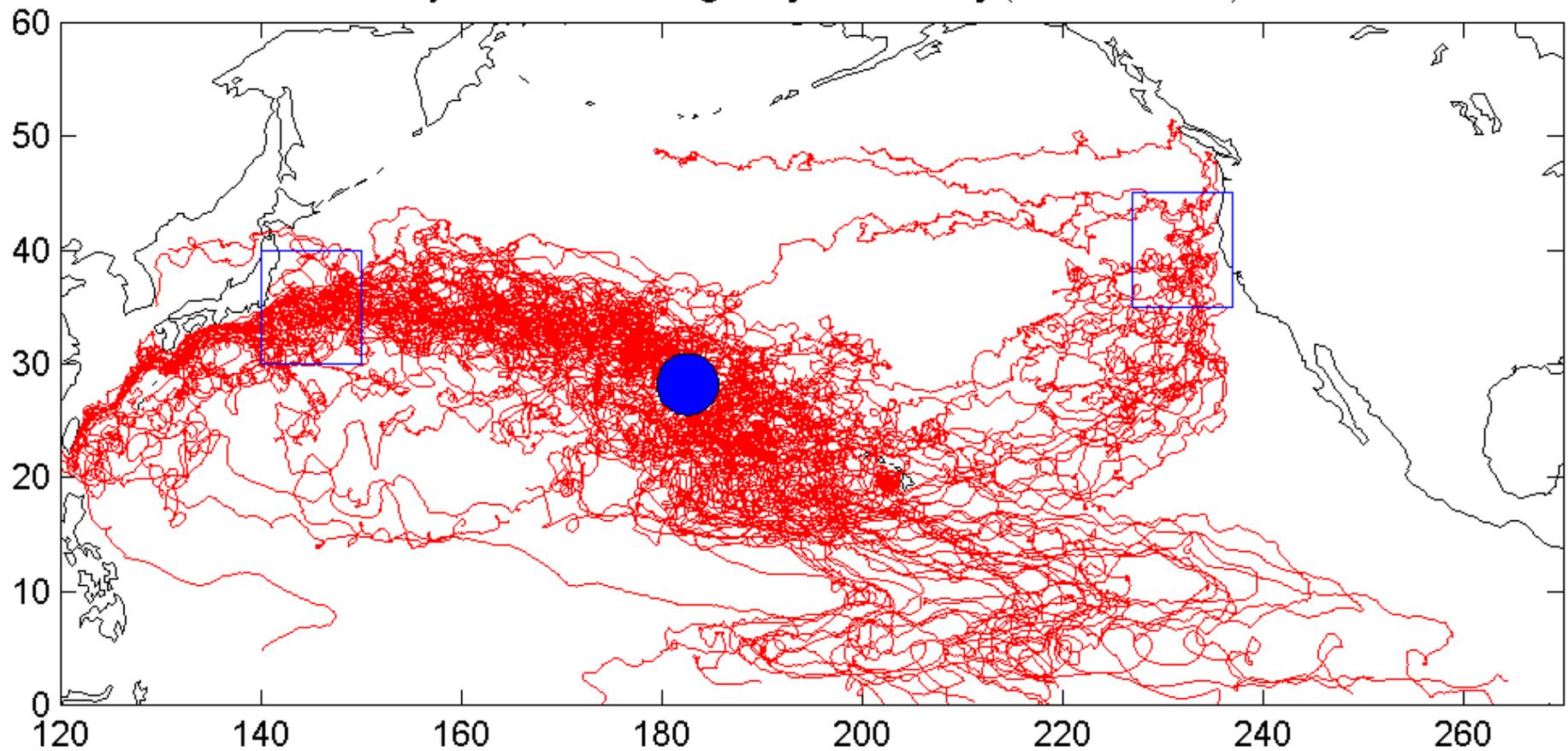
**Model trajectories from Japan to Midway area of the debris,
if March 11 tsunami happened in 2000**

Trajectories starting 11-MAR-2000



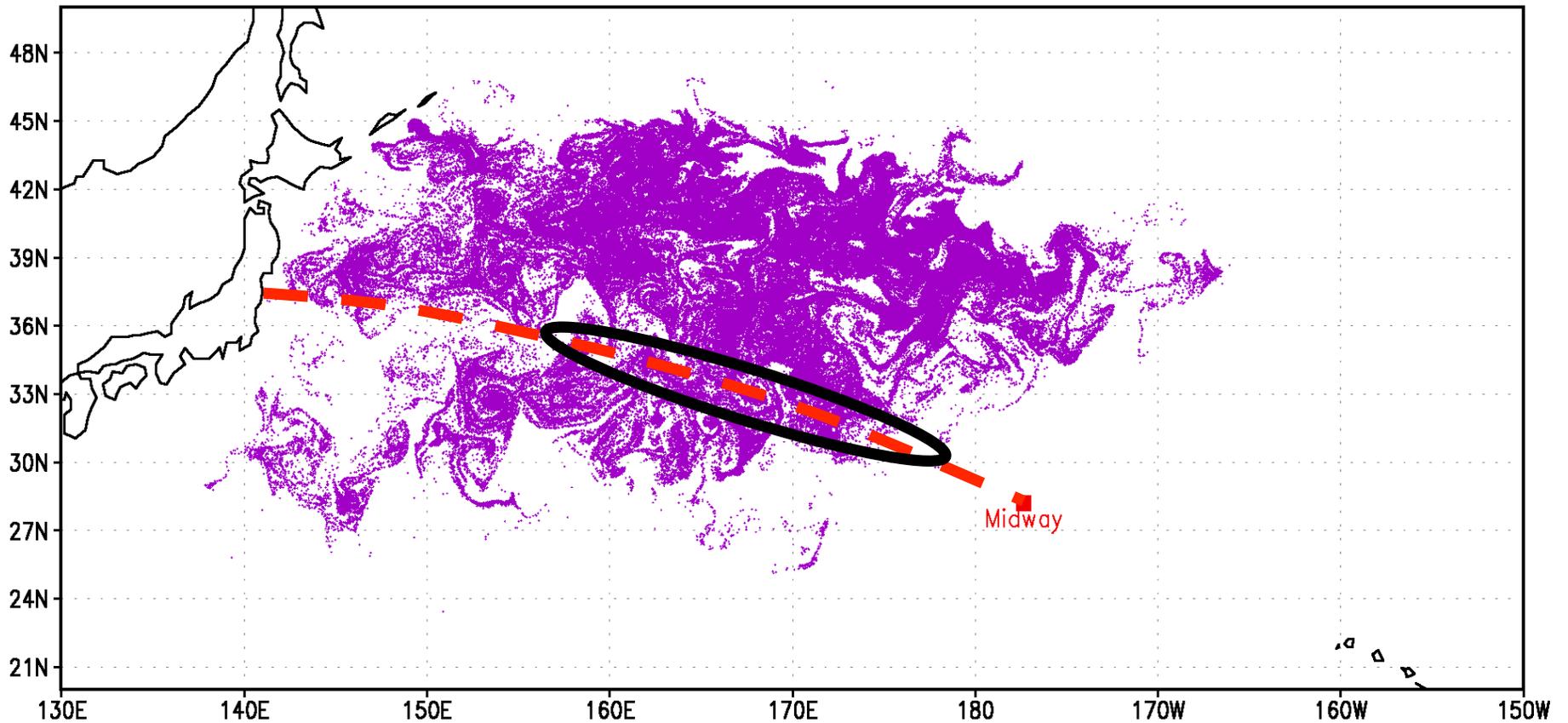
The same pathway is present in trajectories of drifting buoys

Trajectories of drifting buoys to Midway (300 km radius)

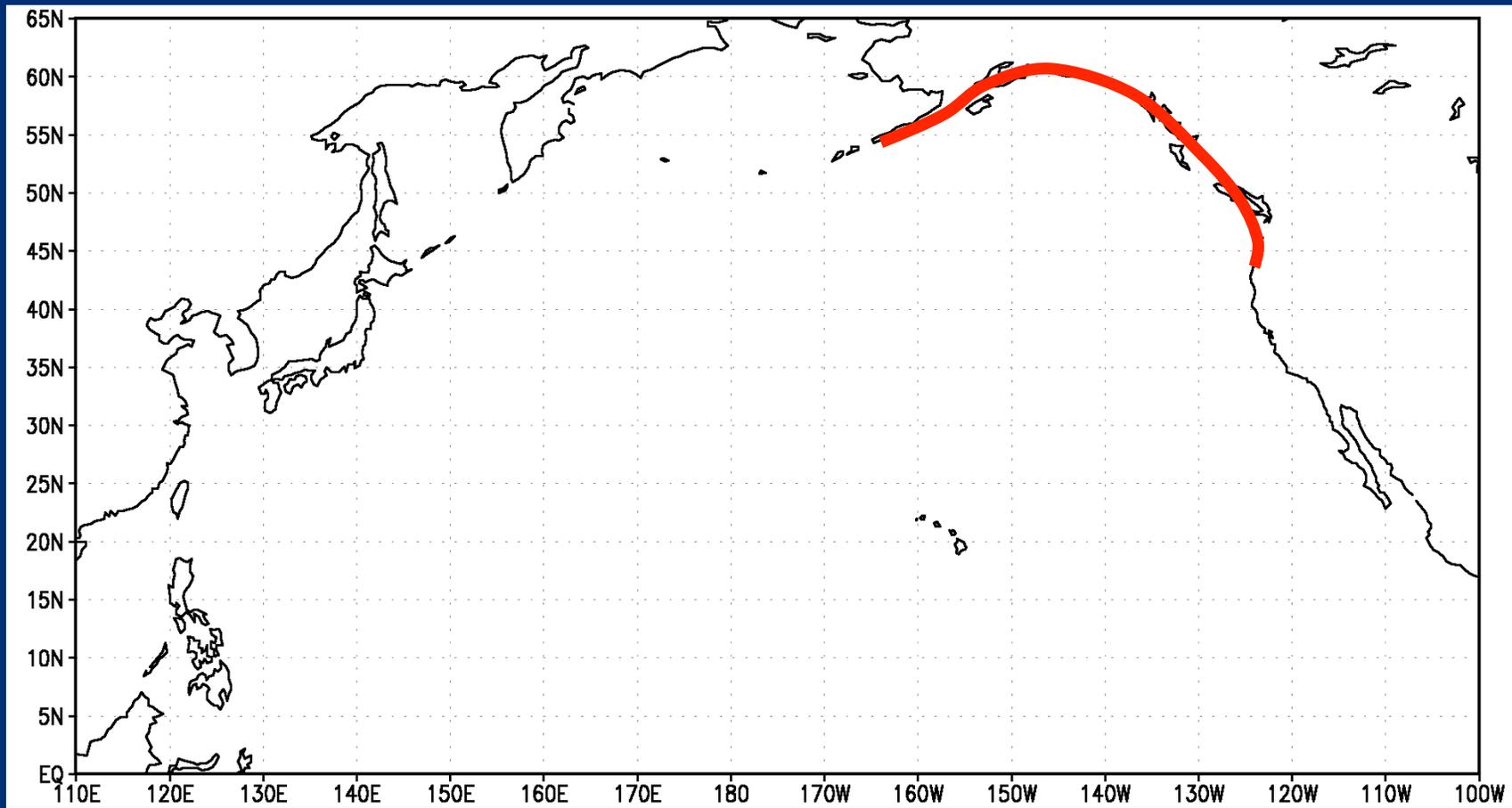


Optimal route for exploration and removal of debris, moving toward Midway

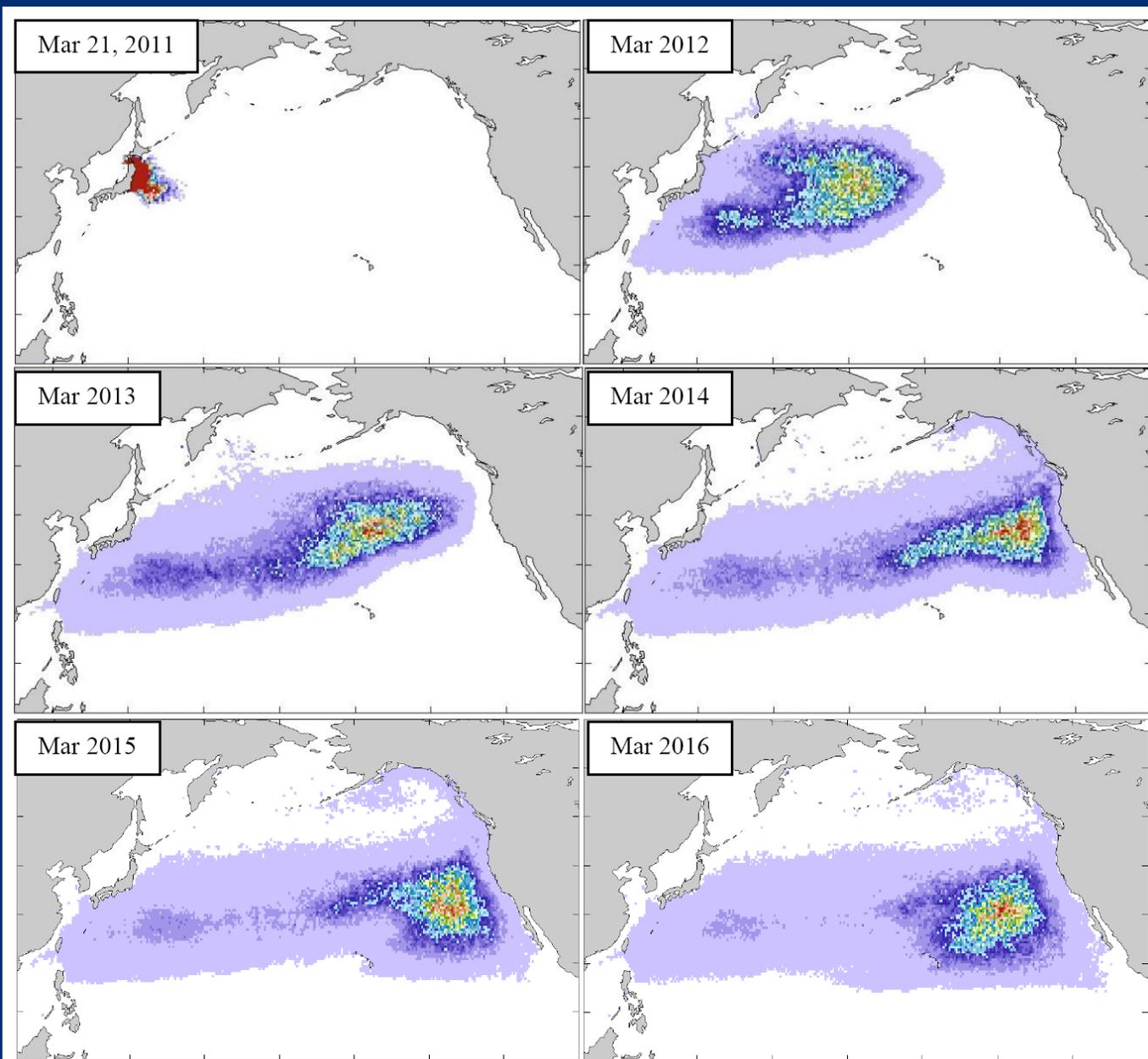
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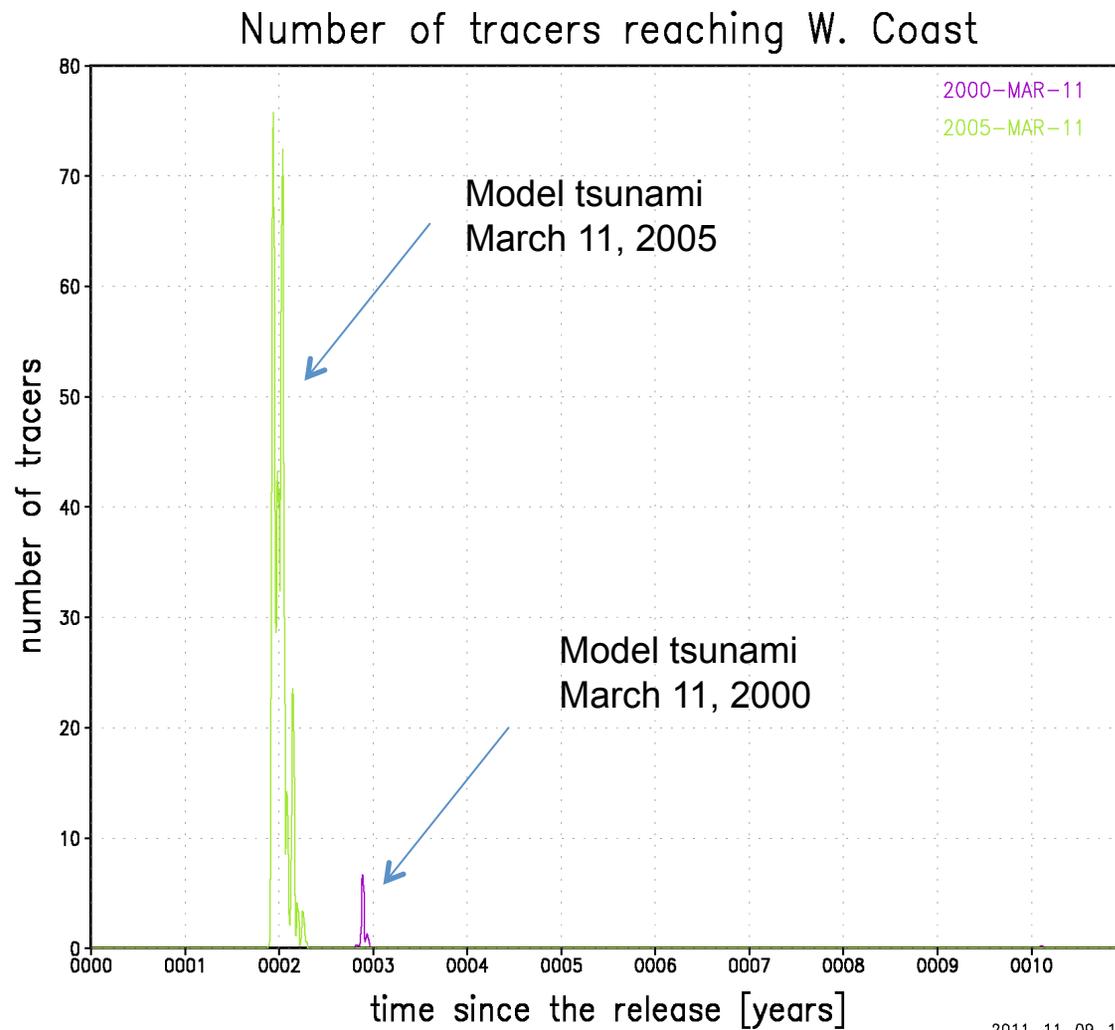
West coast



Model simulation of tsunami debris movement

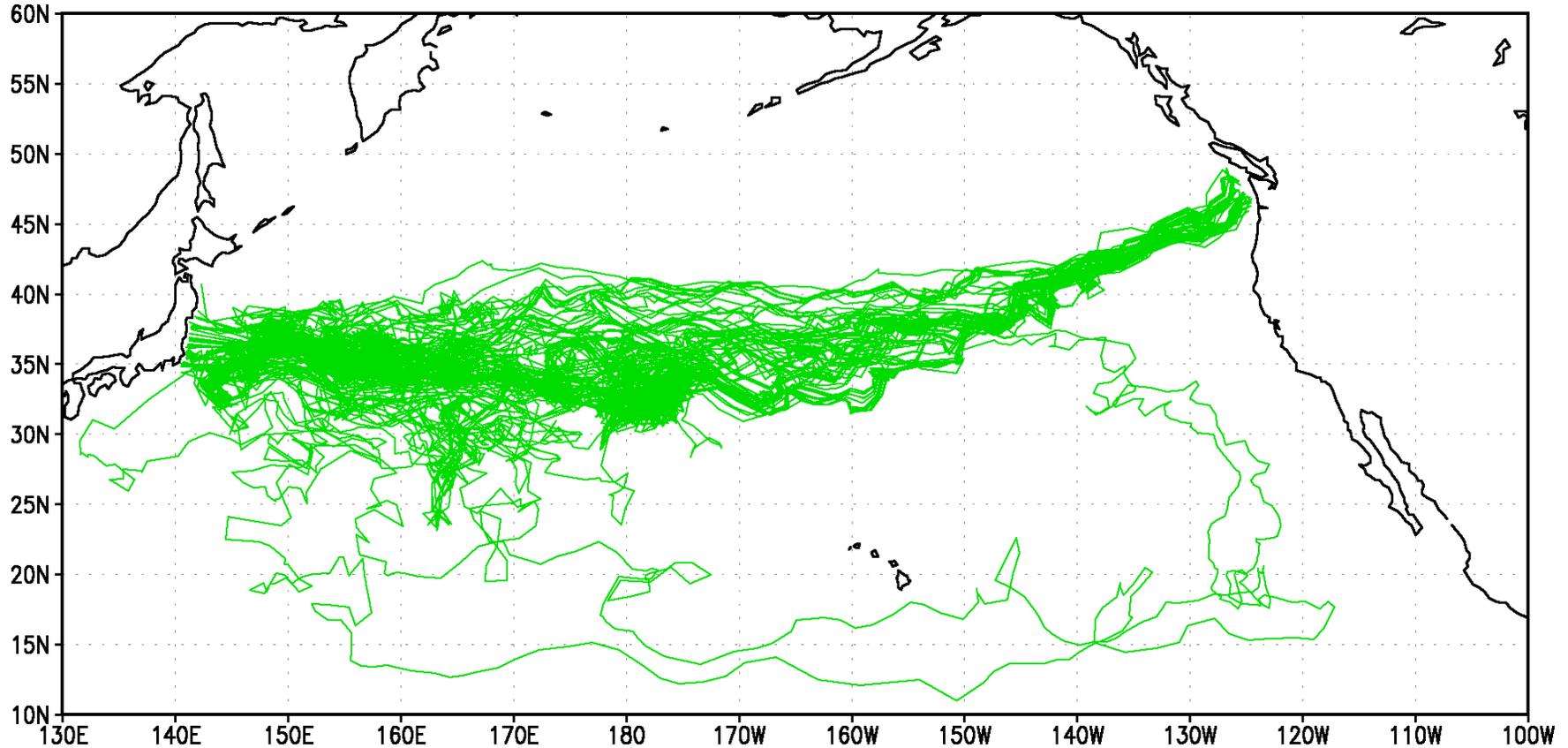


Model flux of March 11 tsunami debris on west coast in different years



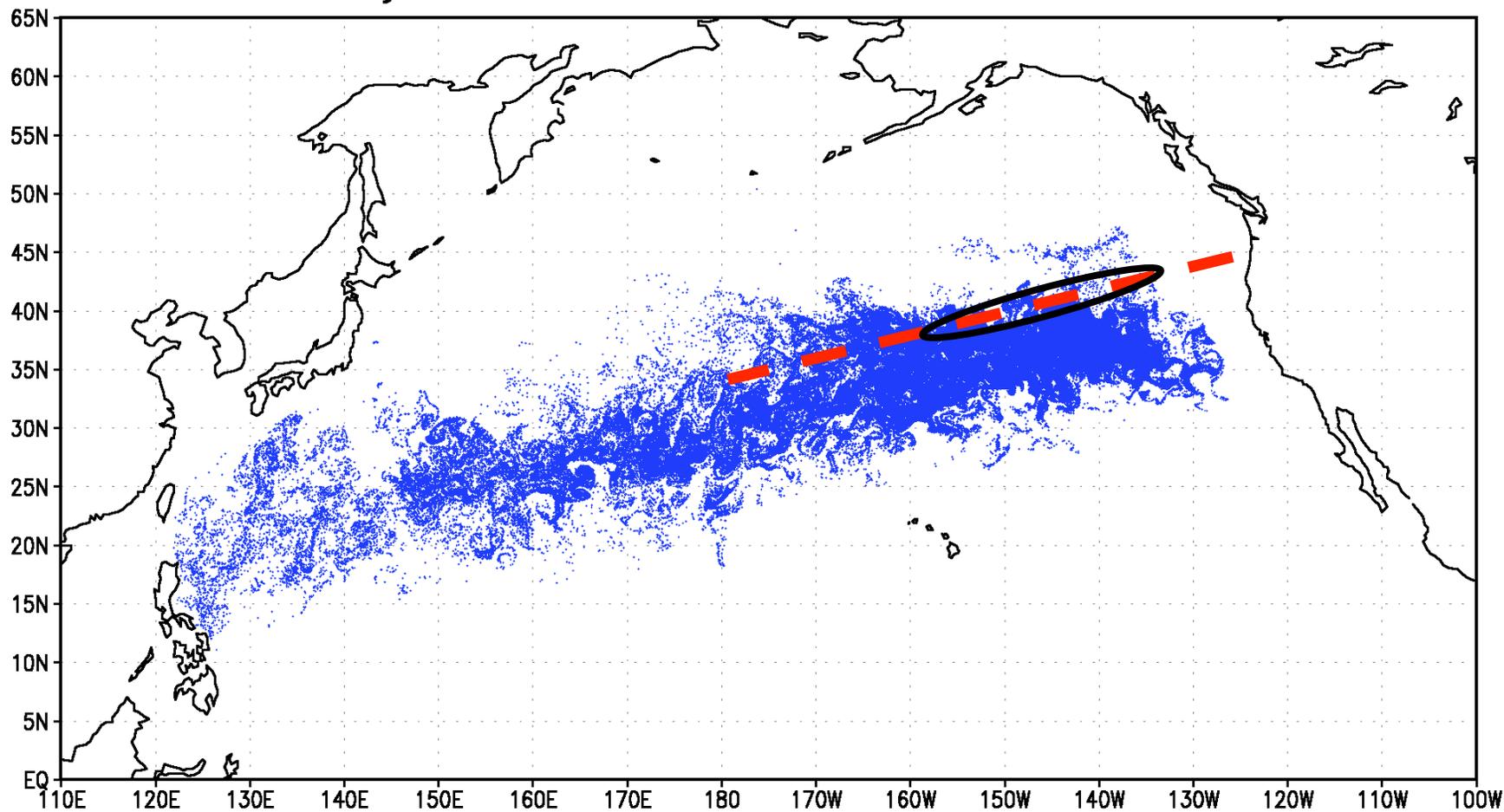
**Model trajectories from Japan to Washington westcoast of the debris,
if March 11 tsunami happened in 2000**

Trajectories starting 11-MAR-2000

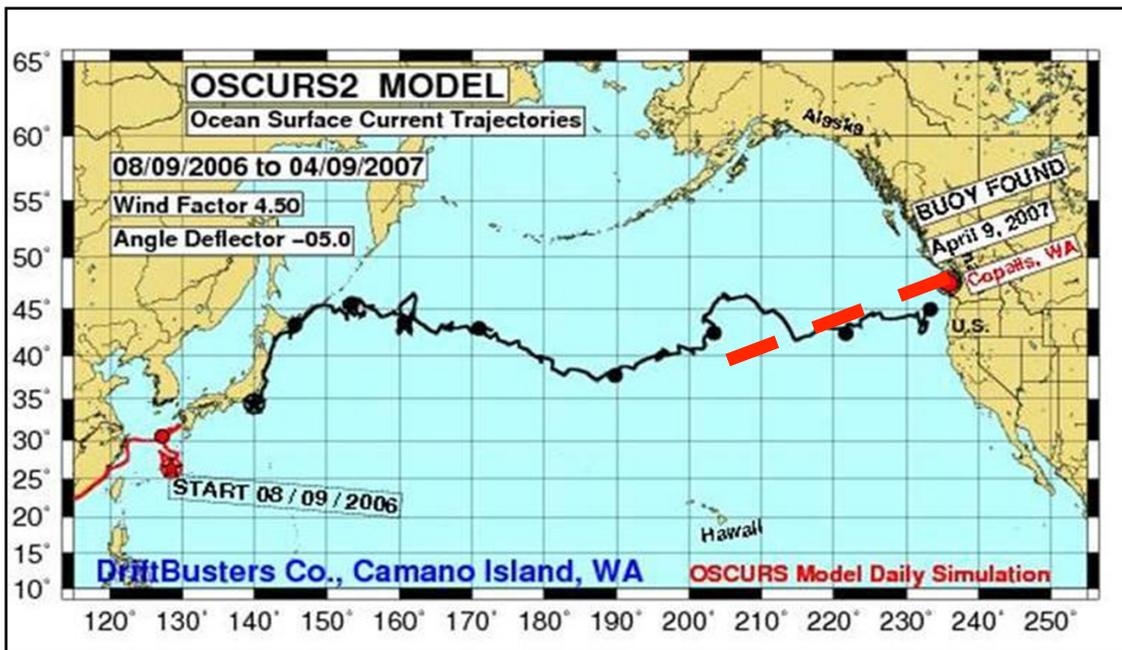
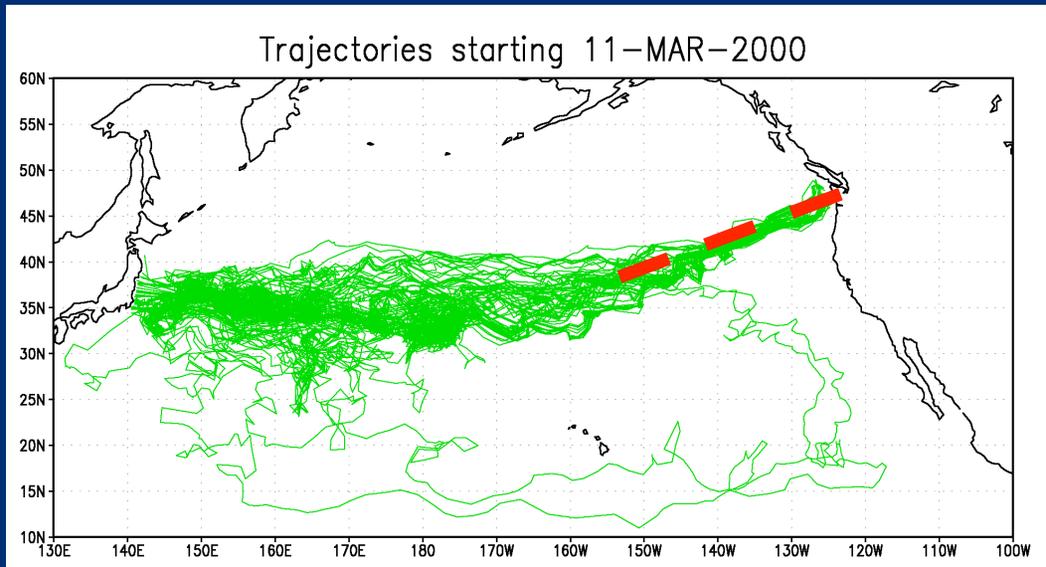


Optimal route for exploration and removal of debris, moving toward west coast

2 years 0 months since 2000-03-11



Robustness pathway to the type of floating objects



How can we mitigate the impact of tsunami debris on the coastlines

At sea:

1. Explore debris composition along the derived pathways.
2. Monitor the pathways for coordination.
3. Use available resources to clean or to block the pathways.

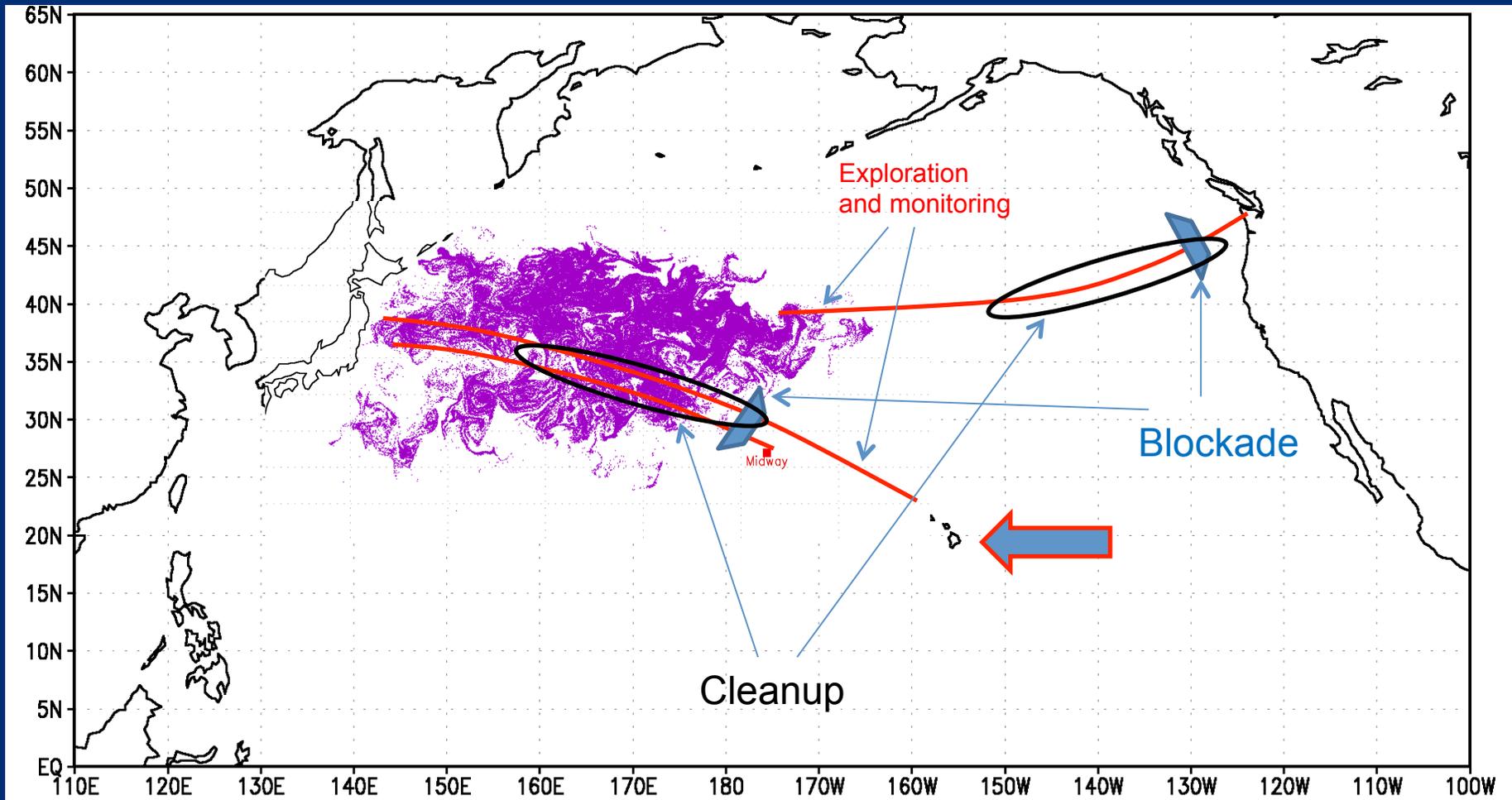
On the coastline:

1. Use at-sea observations to project the timeline of landfall of various kinds of debris.
2. Coordinate with other sites to track changes in debris composition.

All:

Use this tragic experiment of nature to understand dynamics of debris and to address the general problem of marine debris.

At-sea activity



Scientific tasks:

- 1. Deploy drifting buoys to track movement of debris along pathways.**
- 2. Quantify the dynamics of different kinds of debris.**
- 3. Develop characteristics for debris of complex composition.**
- 4. Understand what factors determine differences between different years and create prognostic models of debris circulation.**