

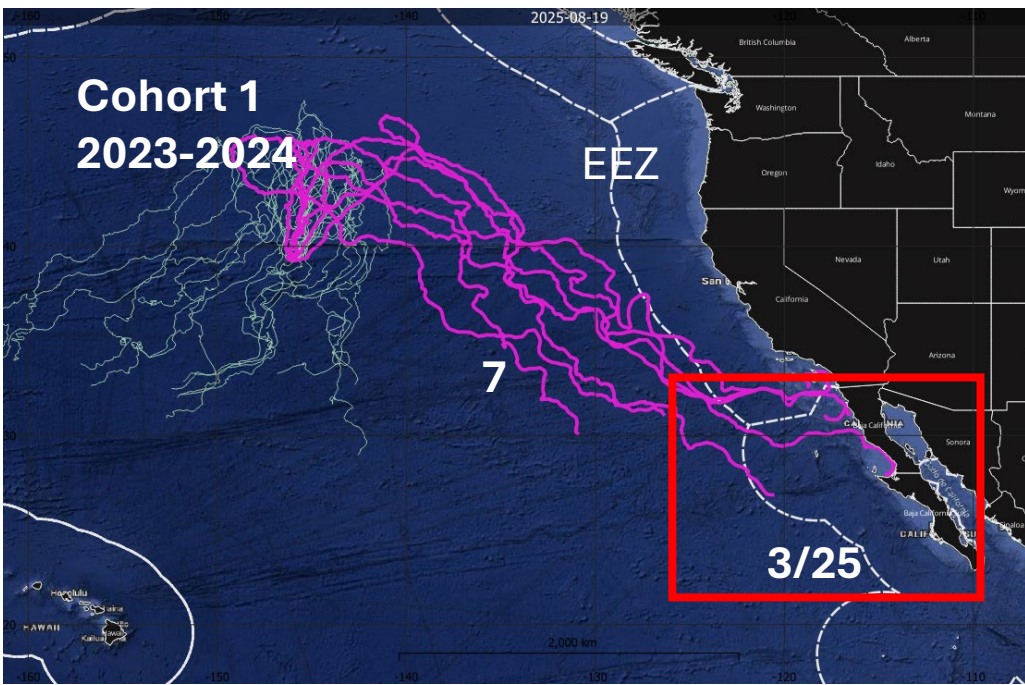
What
do STRETCH
loggerheads
tell us about
recruitment
into Mexican
habitats?

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How can
STRETCH
help
loggerhead
conservation
in Baja
California?

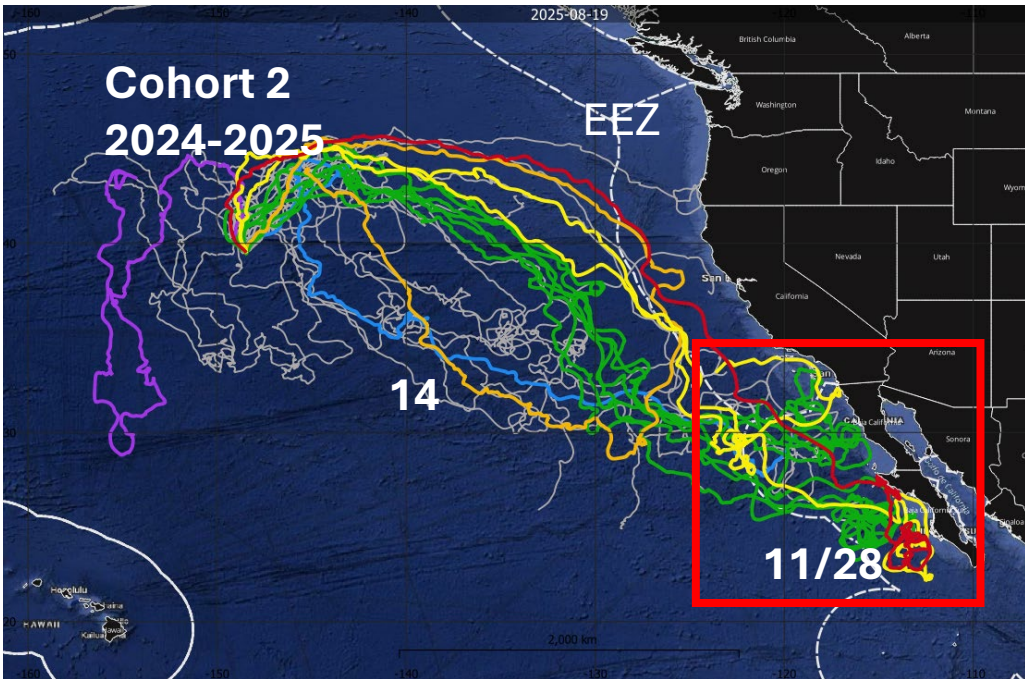
Photo credit: Grupo Tortuguero de las Californias

Photo credit: Port of Nagoya Public Aquarium



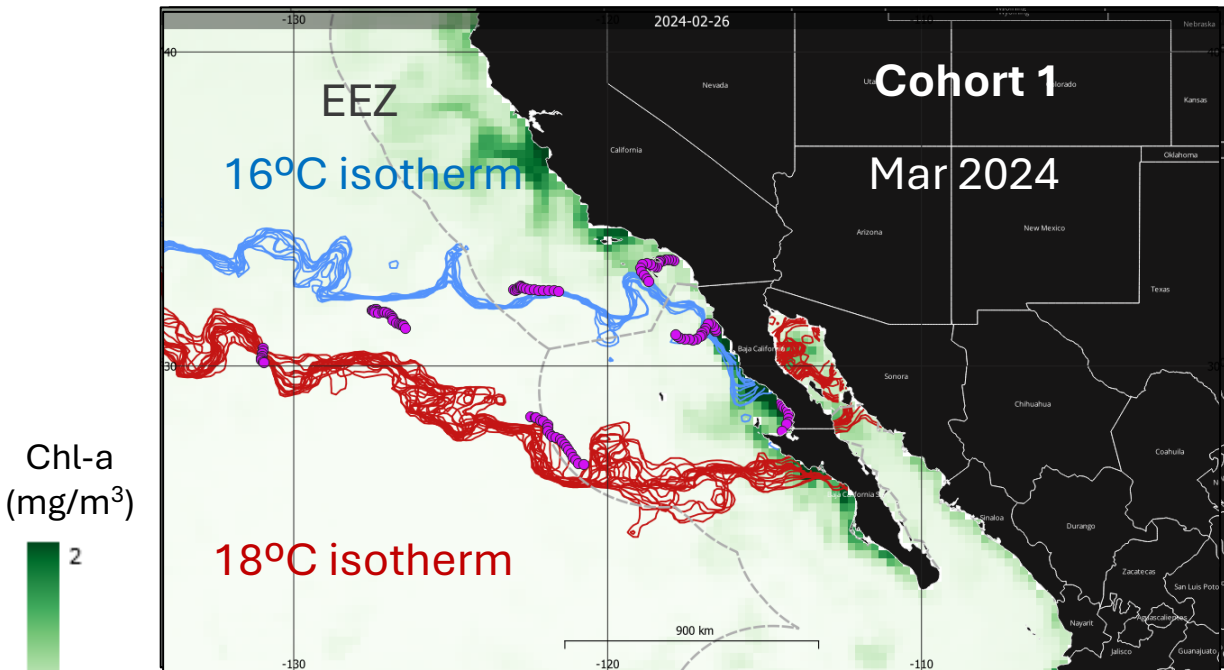
Focus on cohort 1 and 2 turtles heading SE

- Turtles reaching Mexican habitats within its EEZ
- Analyze tracks to identify changes in behavior and how these associate with spatial oceanographic features



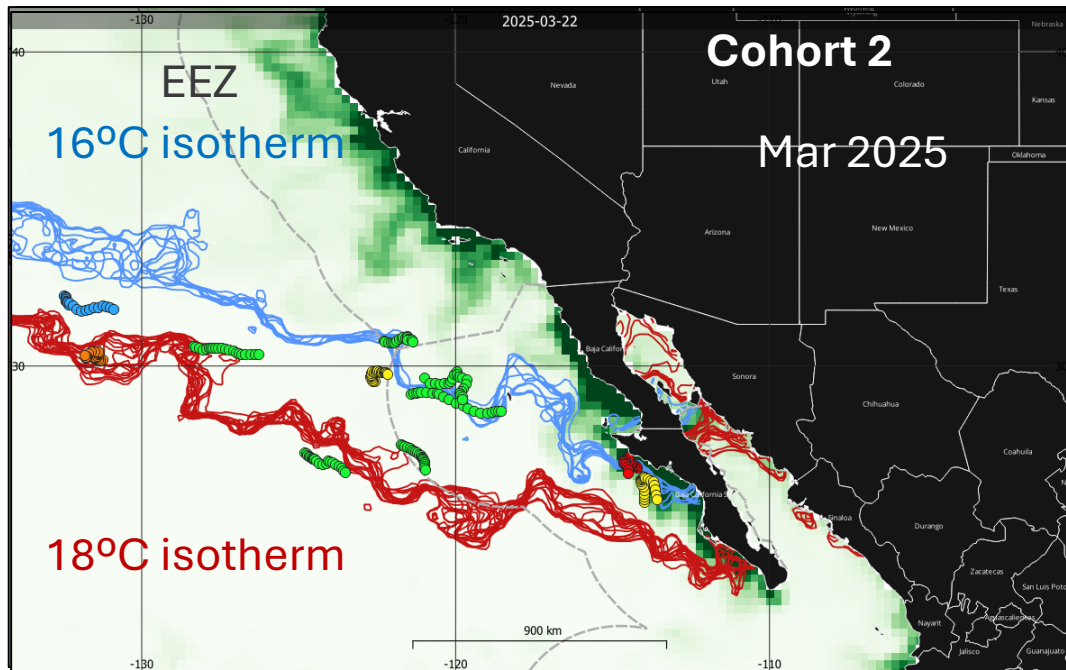
Main objective:

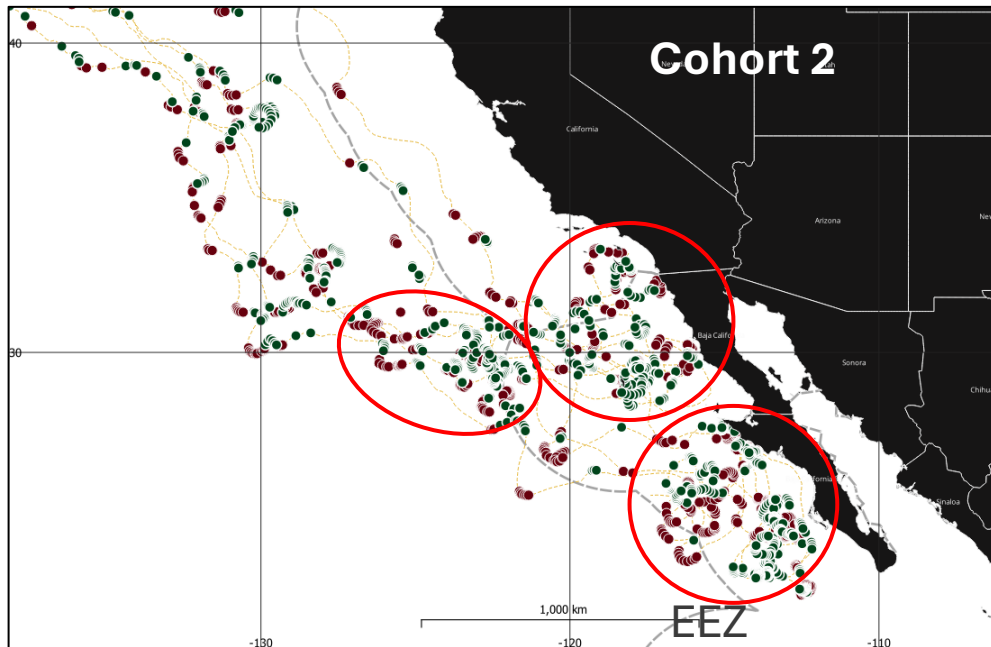
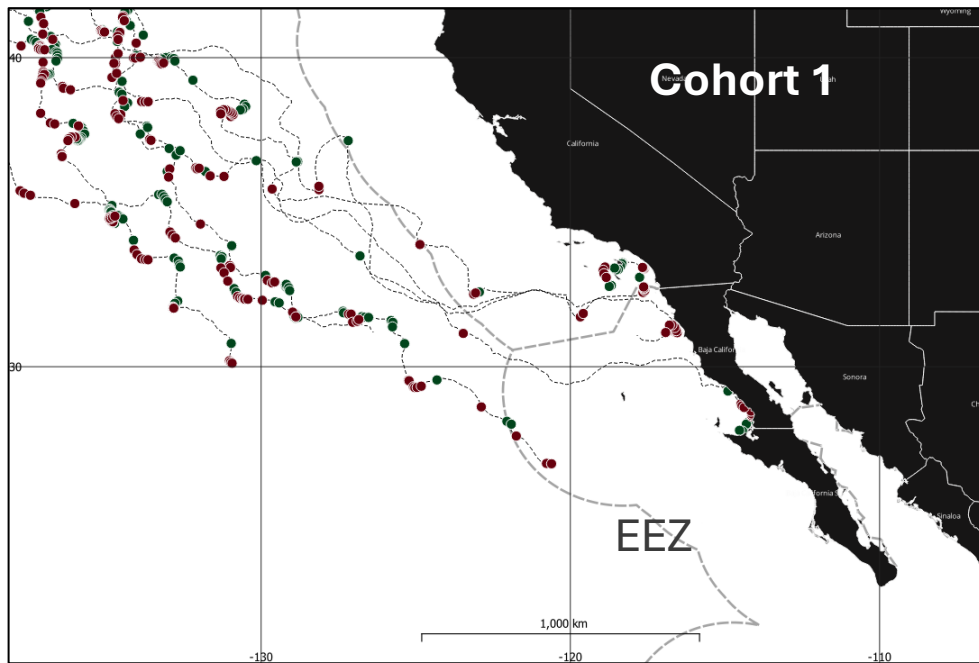
*Understand the how loggerheads interact with **oceanographic features** and how these can influence movements into coastal habitats*



Influence of SST and high productivity areas? YES

- Loggerhead latitudinal movement follows spatial changes in the location of the 16-18°C isotherm band
- As they reach the continental coast, loggerheads are **attracted to zones with high productivity** (e.g., upwelling)



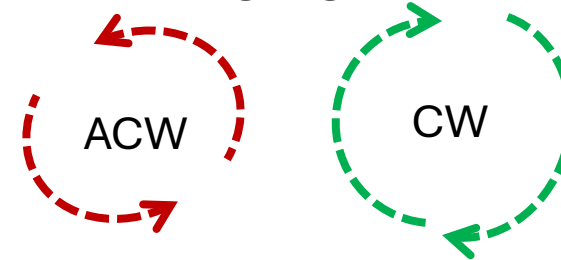


How can we detect relevant changes in behavior?

“**Persistence index**” uses tracking data to extract movement statistics. The **PI** is calculated from:

- distance travelled
- turning angle
- use the orientation of the turning angle

Highest values: lowest displacement and most pronounced turning angle



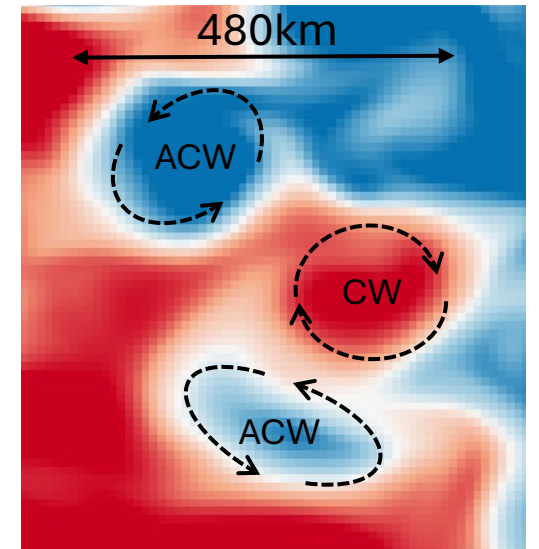
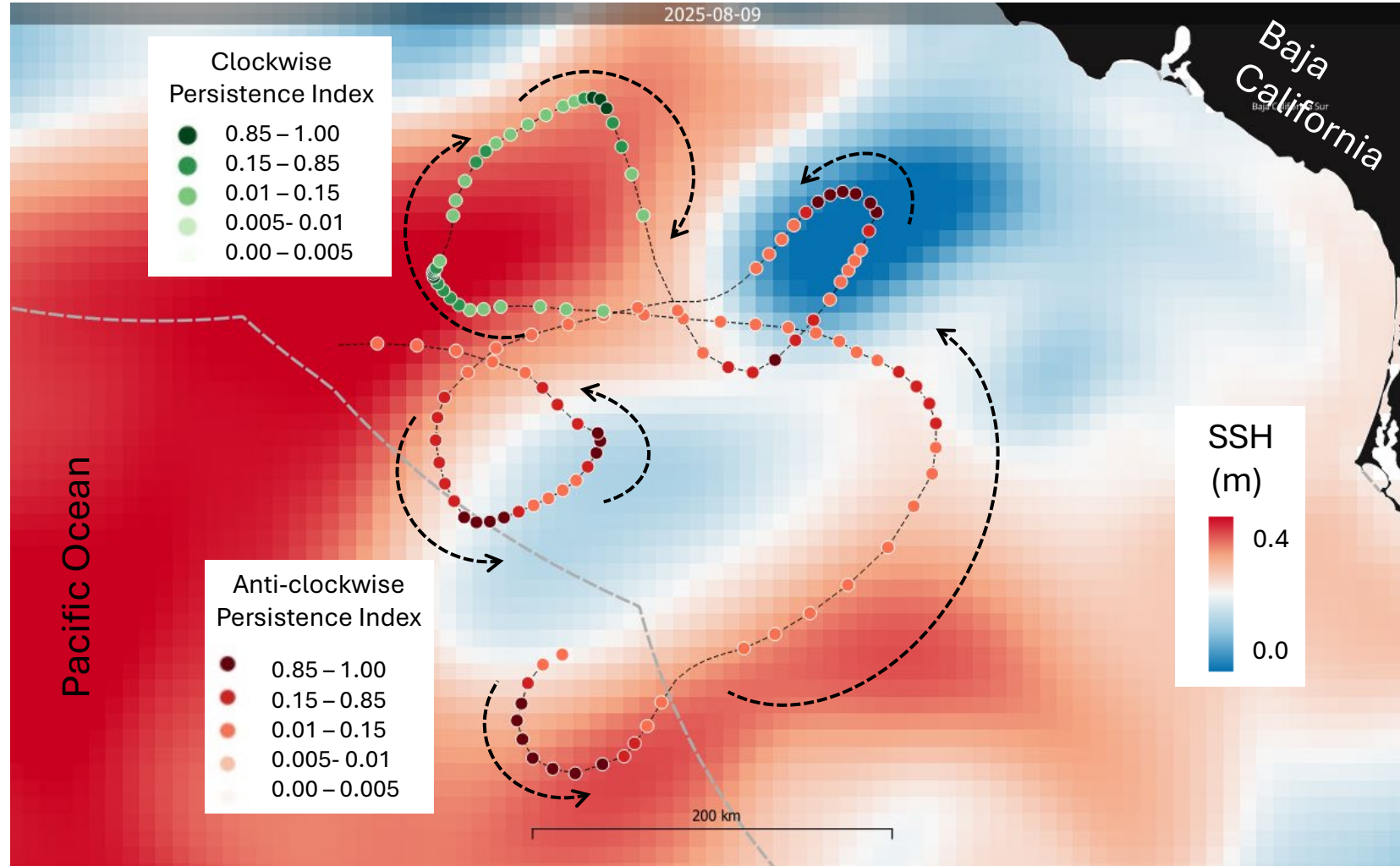
Identified “**hotspots**” where PI values indicate areas of restricted search

Insights:

- ***Oceanographic features that are associated with PI hotspots?***
- ***Greater abundance in the Mexican EEZ?***

e.g., **Pericu**: 2025-07-12 to 2025-09-19 (69 days)

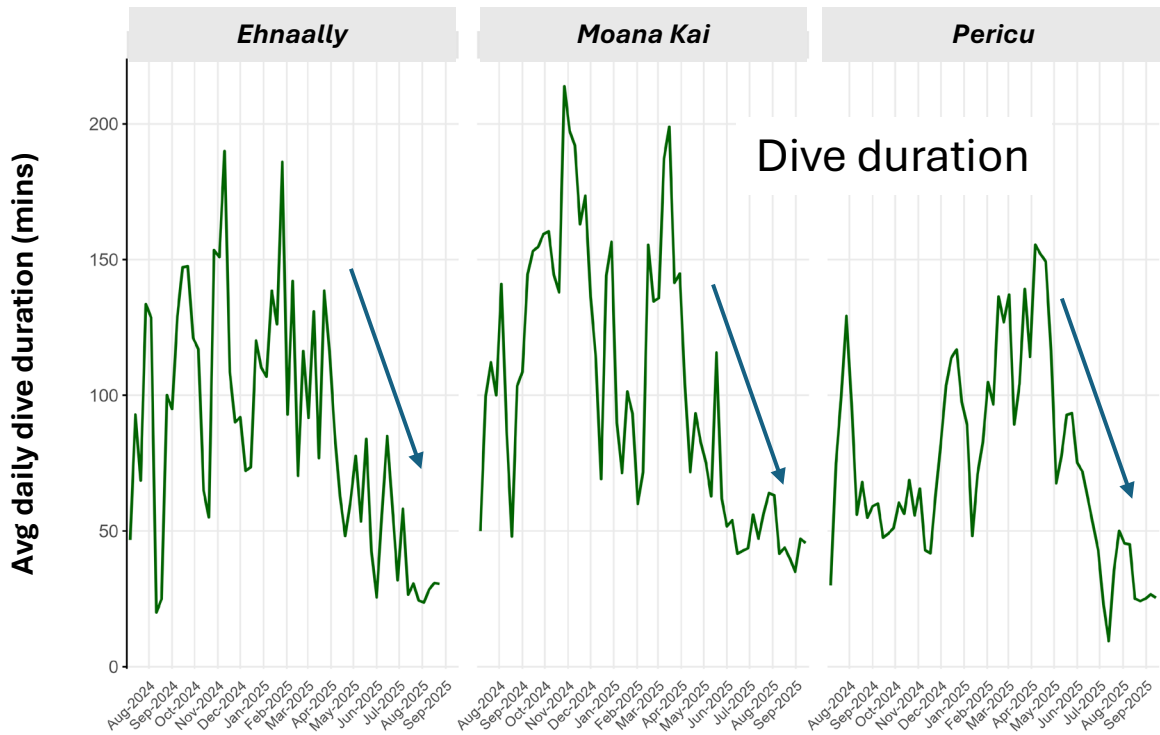
10s-100s km



Mesoscale eddies increase prey abundance and accessibility through aggregation of organisms along convergent boundaries.

In these zones loggerheads typically **alter their diving behaviour** (deeper/longer or more frequent shallower foraging dives)

and **reduce their horizontal movement** ('area-restricted search')



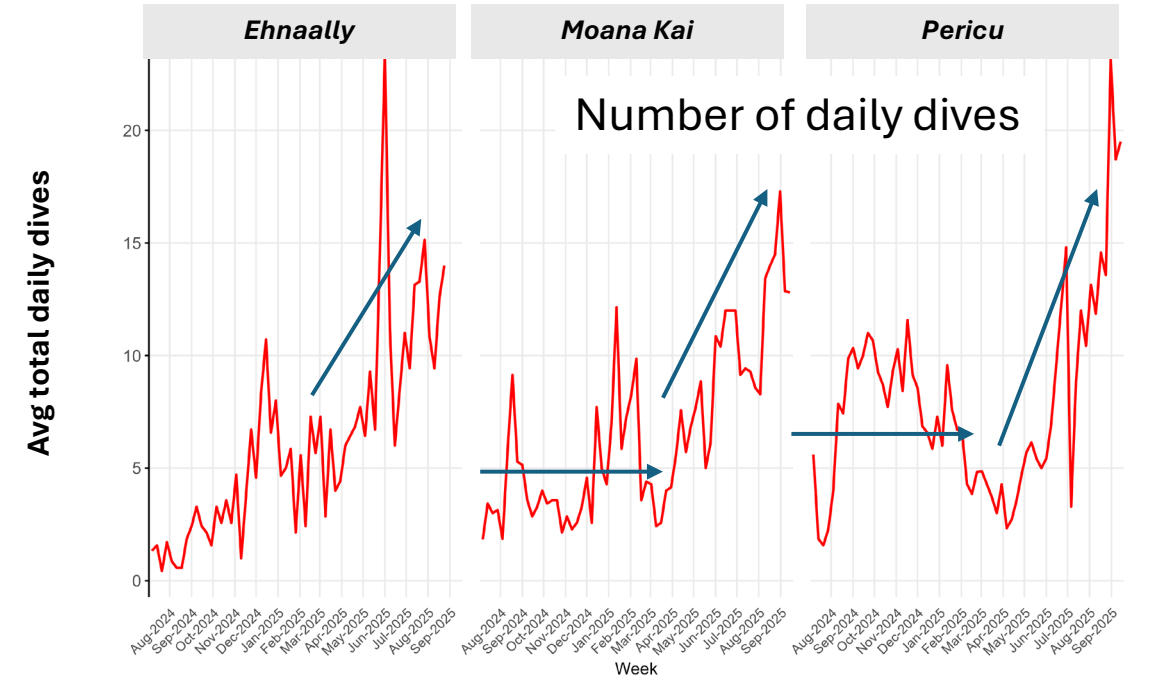
Three turtles with SPLASH10 tags: dive statistics

- *Dive duration (mins)*
- *Dive Depth (m) and Number of daily dives*



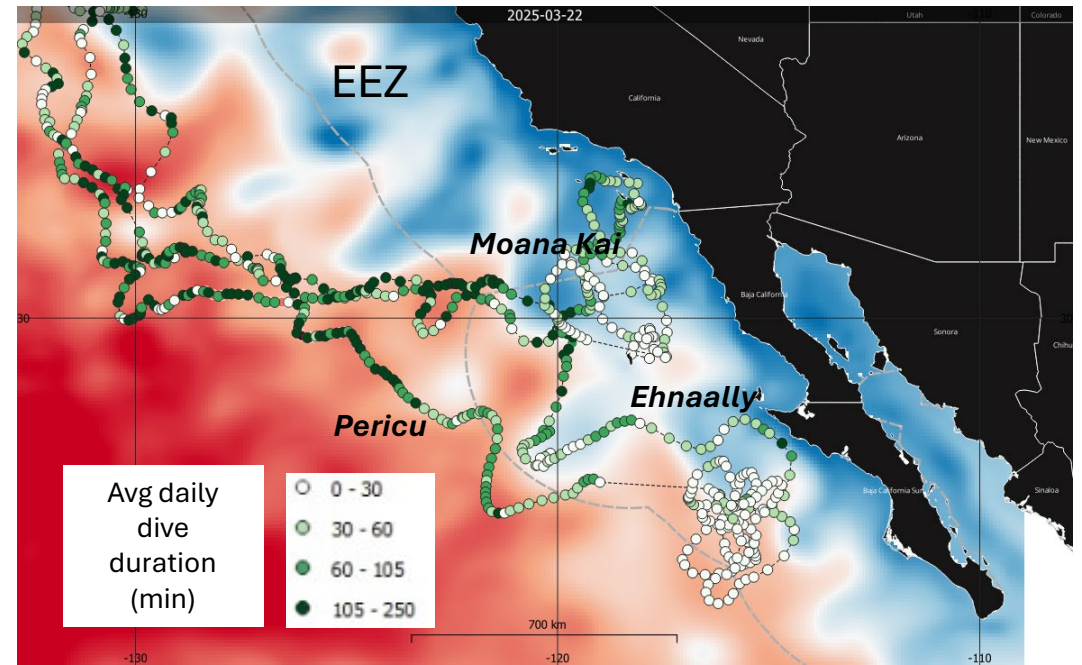
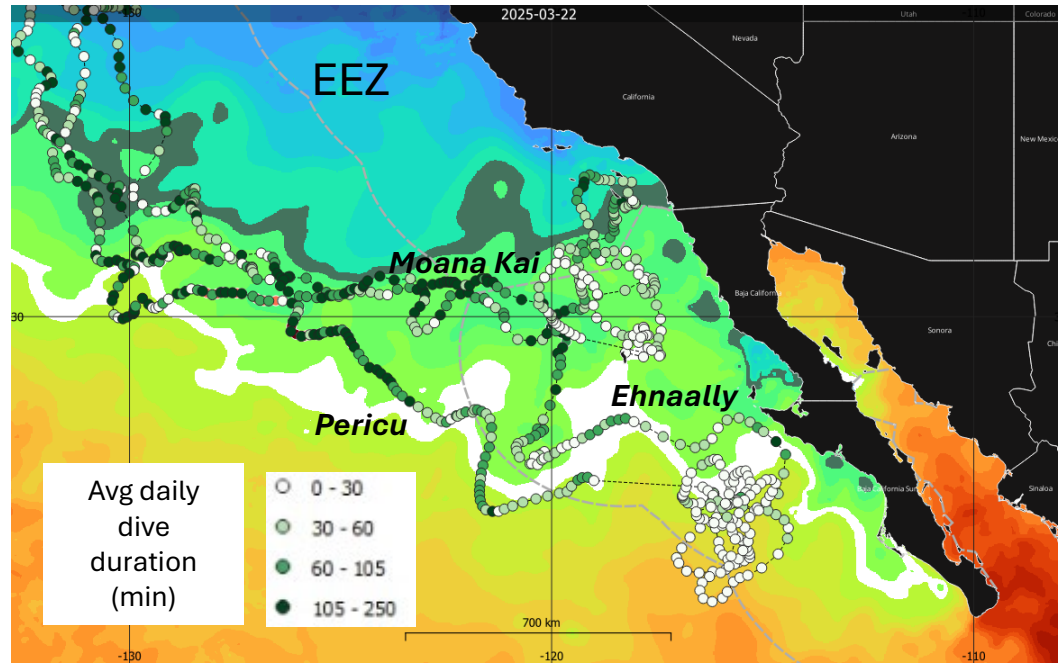
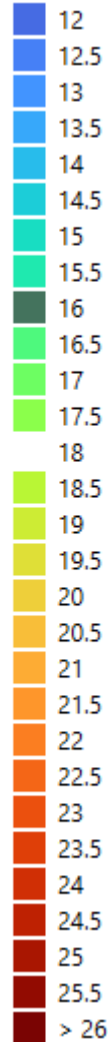
Pattern seen across all three turtles: Beginning around March-April (earlier for Ehnaally)

- Reduction in dive duration
 - Increased number of daily dives
- e.g., **shorter, more frequent dives**

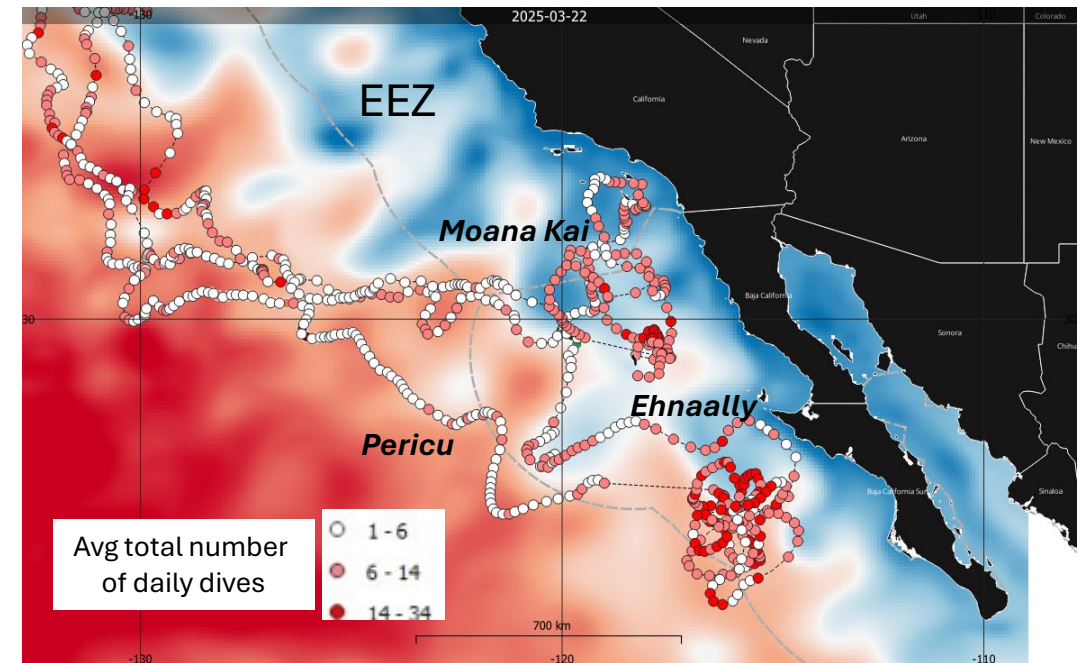
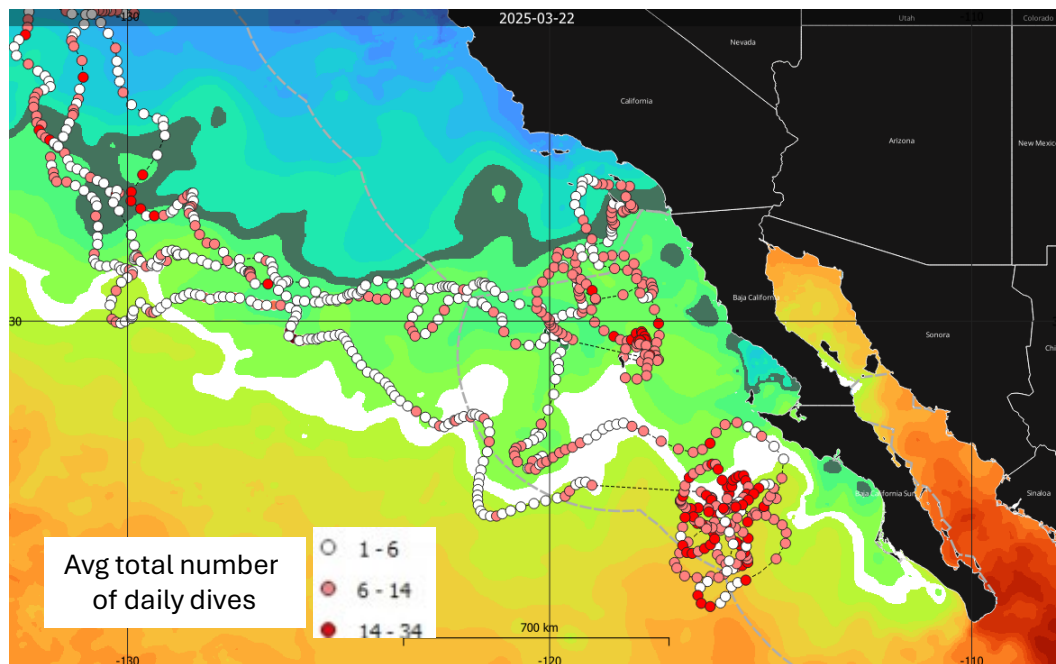


Does this change in behavior correlate with moving into different oceanographic conditions?

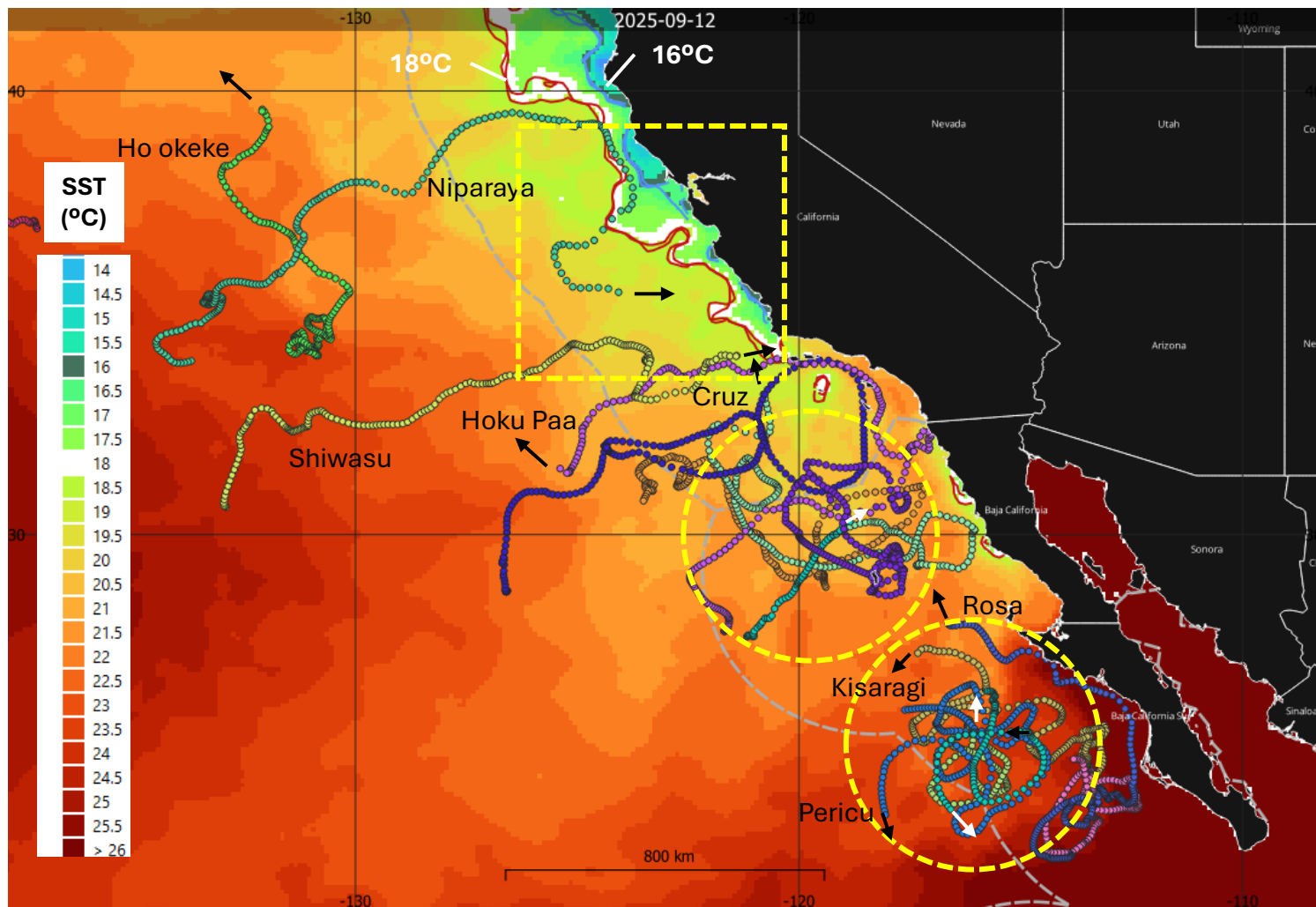
SST
(°C)



SSH
(m)



Last 80 tracking days

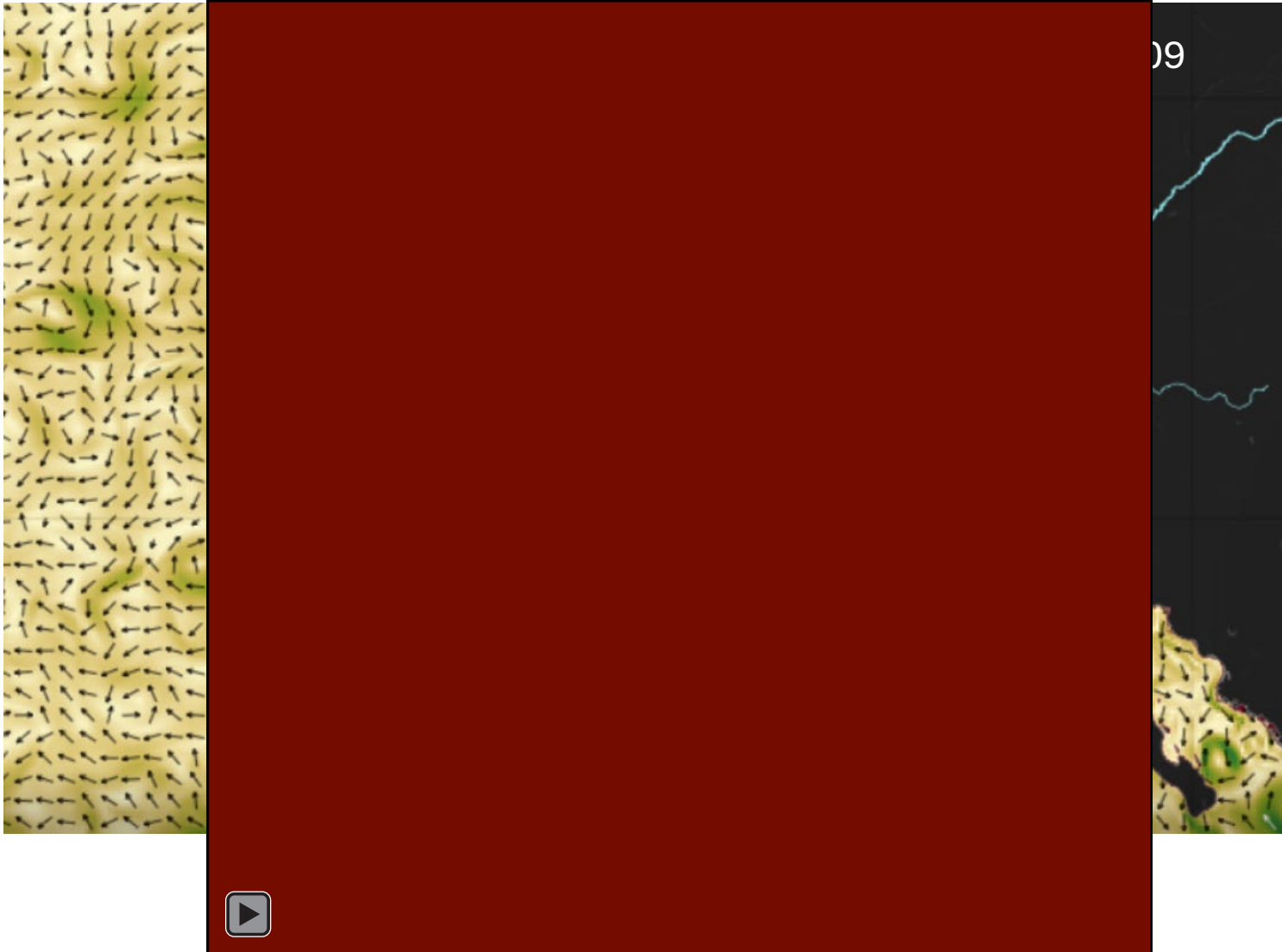


**Most surprising:
what they DIDN'T do than what they DID**

- As of beginning of October, of the 17 still active, 11 remain in or just outside of Mexican EEZ
- **Surprisingly, none have entered coastal (neritic) habitats!**
- **Multiple orientations** of the swimming trajectories
- **VERY IMPORTANT** result, suggesting **significant loggerhead habitat / residency (?) offshore Baja California!**
- **WE WEREN'T AWARE OF THIS!!**

Oceanographic data source: Copernicus Marine Environment Monitoring Service (CMEMS), accessed via data.marine.copernicus.eu.

Surface current velocity (m/s) from



- Even without visible eddies, areas with fast, wavy, or sheared **currents** can support foraging.
- These create smaller-scale **convergence zones, boosting productivity, and accumulating prey** — all of which turtles can exploit as they navigate these dynamic seascapes.
- We can assume they are remaining in or being attracted to **prey-rich zones**

Figure source: Copernicus Marine Environment Monitoring Service (CMEMS), accessed via data.marine.copernicus.eu.

The importance of Baja California to Pacific loggerhead conservation



- Over 1,000 boats in Golfo de Ulloa alone, 26 coastal communities, nearly 8,000 residents who depend on fisheries for their livelihood
- Importance for loggerheads
 - **Elevated growth** rates
 - But **high mortality** rates
- **Grass-root** movements working with fishing communities to **consolidate awareness of risks and minimize sea turtle bycatch**
- **High level of awareness** of the impacts of unsustainable fishing practices
- Fisheries Commission is re-starting **onboard observer program** on coastal fisheries (2025)

How can the STRETCH project help?

Provide novel insight on:



- Distribution and behavior of the loggerheads offshore and (desirably) as they enter the coastal habitats.
- What **promotes their remaining** in the pelagic realm?
 - response to prey availability,
 - temperature,
 - ocean structure.
- Timing, frequency, and location of entrance corridor(s) into BCP neritic habitats
- Comprehend **how ephemeral and persistent oceanographic features** influence these and other movements between coastal habitats
- The actual underlying mechanisms for **when and where turtles and Baja California-based fisheries most overlap**
- Derive **predictions** that could help **avoid or reduce fishery bycatch**

LET'S MAKE
THE OCEAN
A HOME.

DEVELOPING COLLABORATIVE
SOLUTIONS TO MINIMIZE SEA TURTLE
BYCATCH IN ARTISANAL FISHERIES.

MARES
COMUNIDAD



Thank you!