

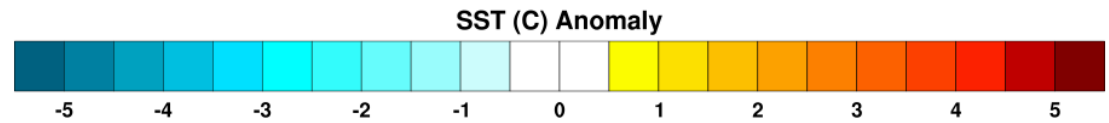
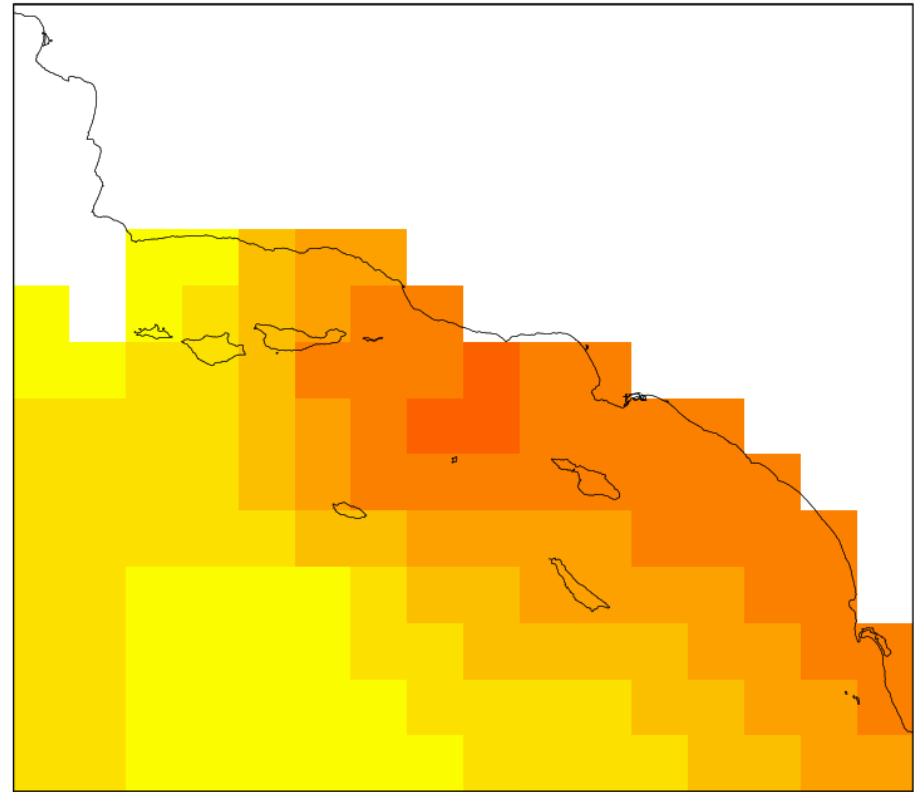
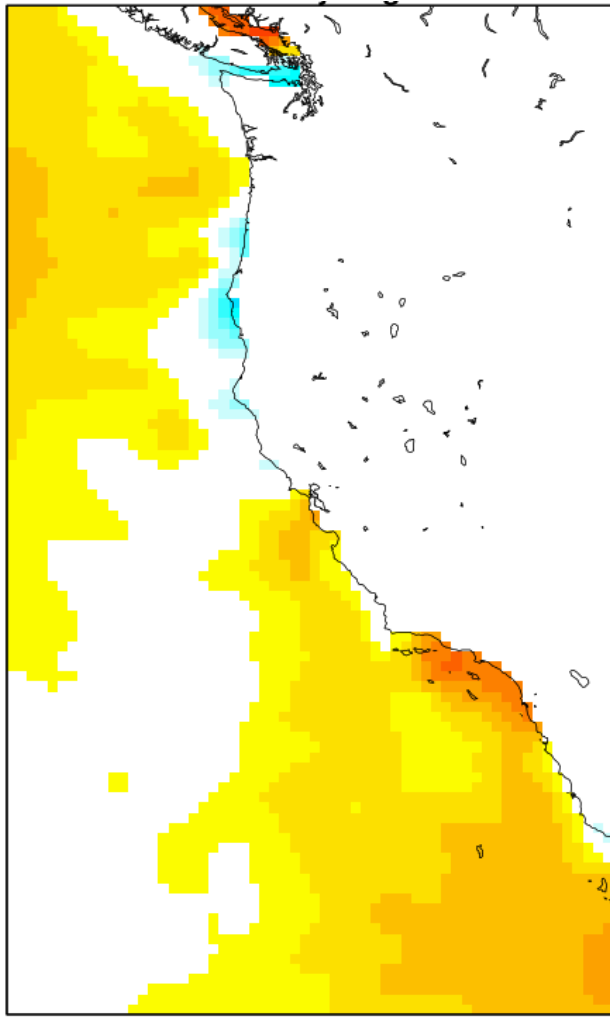
A satellite image of the California coast, showing a large area of white marine stratus clouds along the shoreline. The land is visible in shades of brown and tan, and the ocean is a dark blue. The text is overlaid on the image in a bright green color.

Anomalous California Marine Stratus Frequency and SST during Summer 2014

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SST Anomaly May-Sep 2014 (NOAA OISSTv2 0.25°)



SST anomalies up to 3° C in So Cal Bight

SATELLITE DATA:

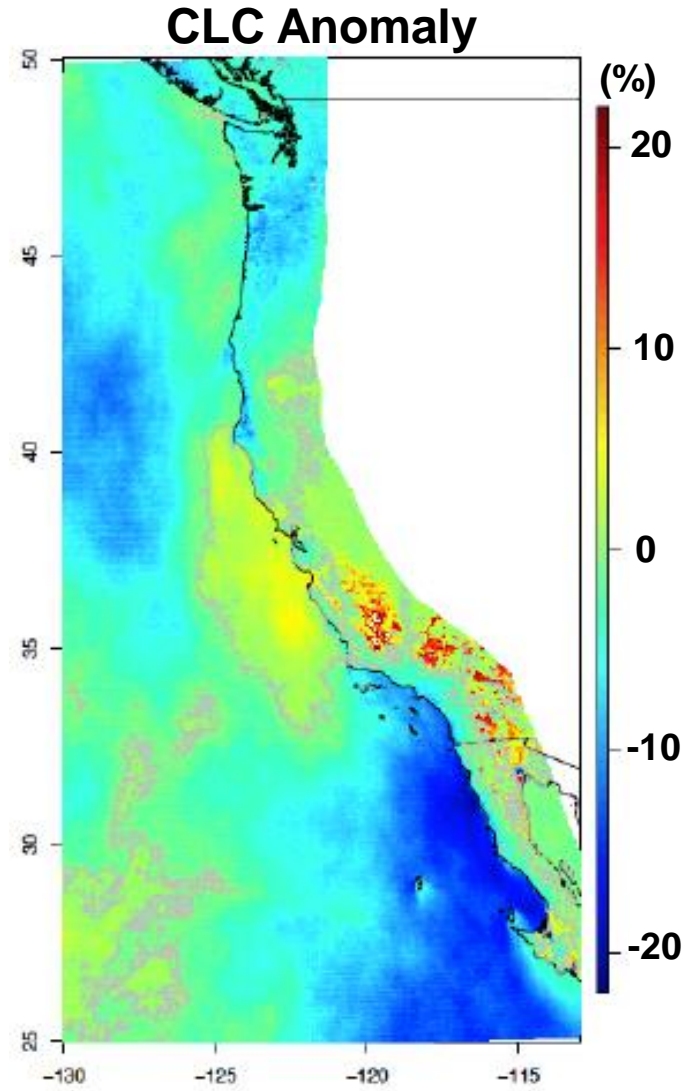
GOES Imager

- 4km spatial resolution
- 30 minute temporal resolution
- 1996 – 2014
- visible albedo and 4 infrared channels

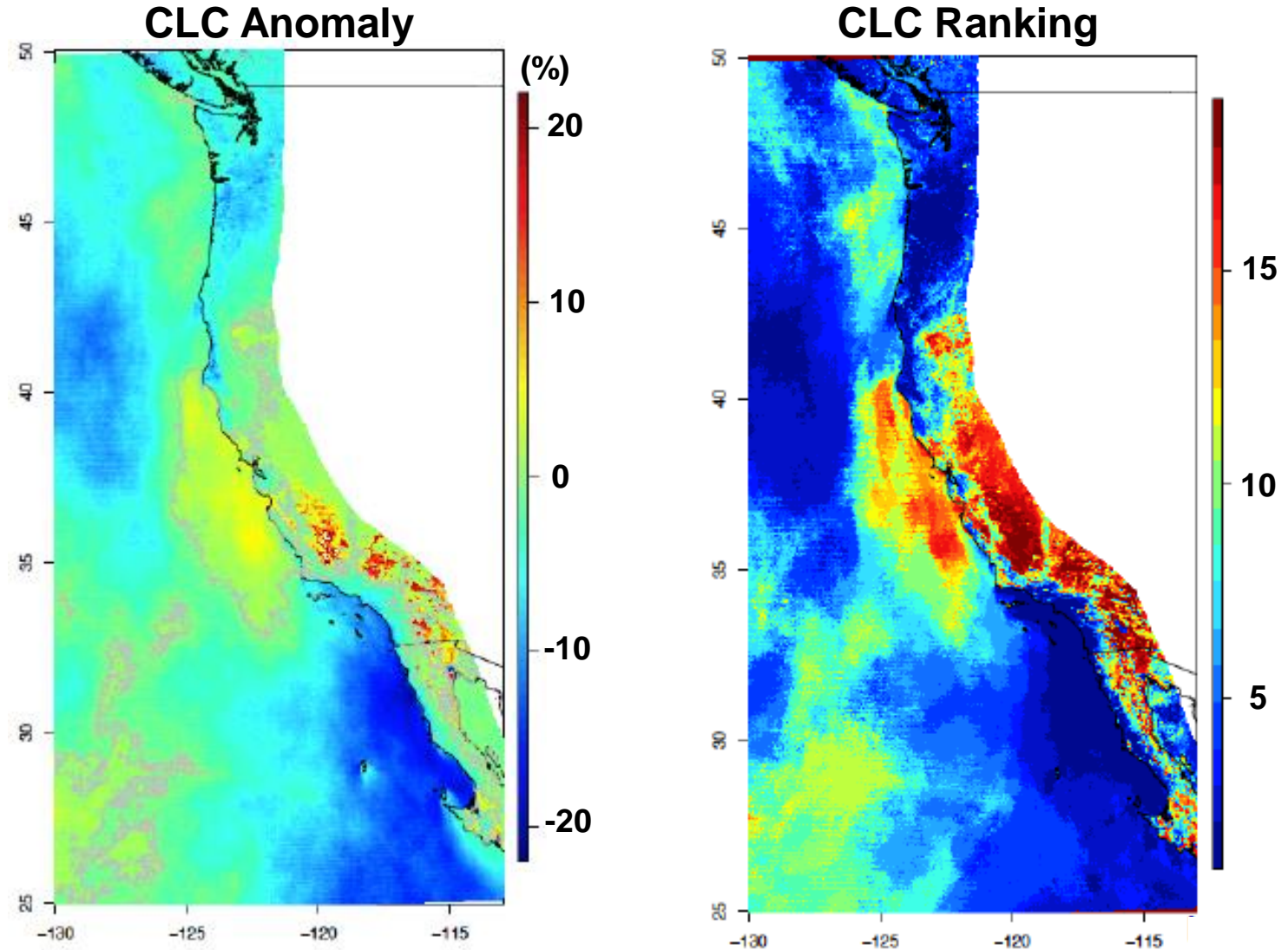
Coastal Low Cloud Algorithm (Schwartz et al, *submitted to GRL*)

- utilizes both visible and infrared channels
- distinguishes warm low clouds from cold high clouds
- optimized for coastal region

Coastal Low Cloudiness (CLC) Summer (MJJAS) 2014

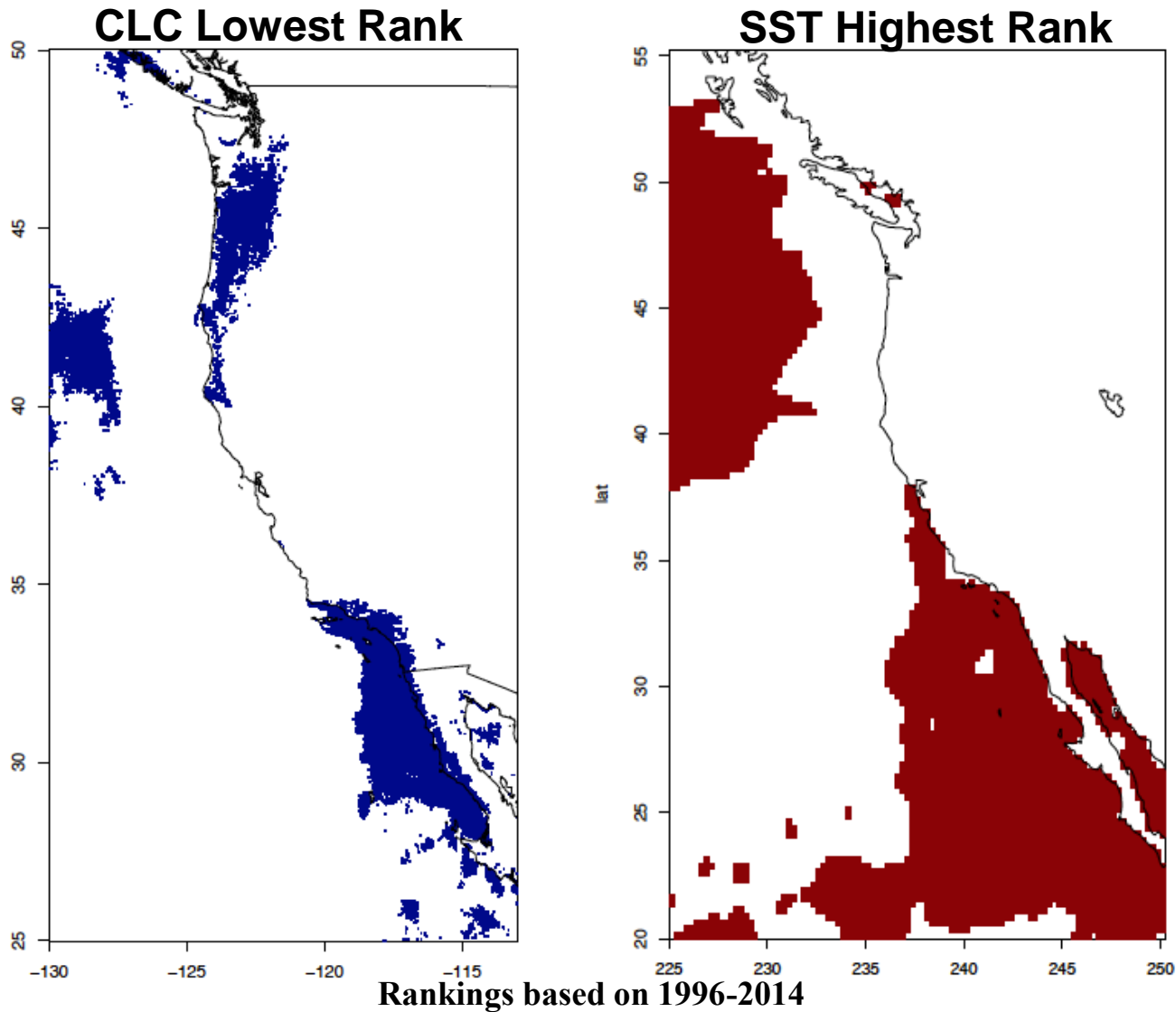


Coastal Low Cloudiness (CLC) Summer (MJJAS) 2014



Coastal low clouds lowest in 19 years over much of So. Cal

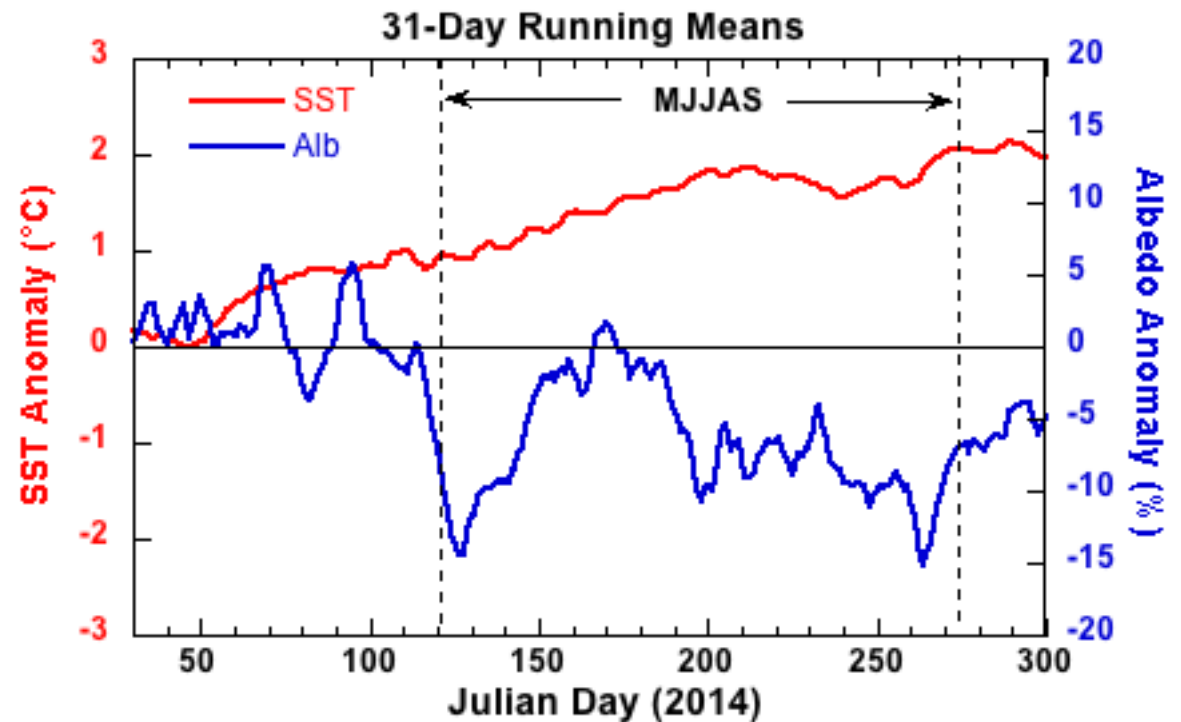
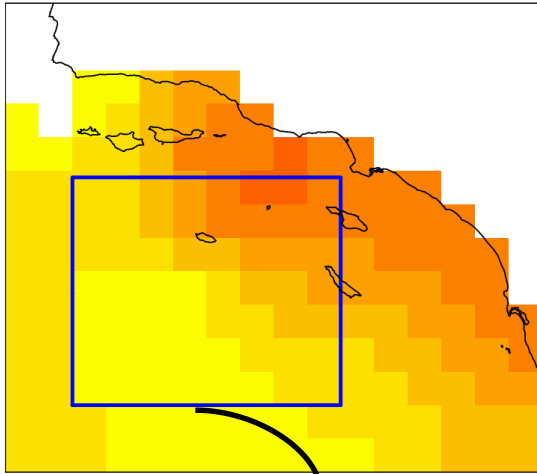
CLC & SST Summer (MJJAS) 2014



How might marine stratus and SST be related?

SST vs. Low Cloud (albedo)

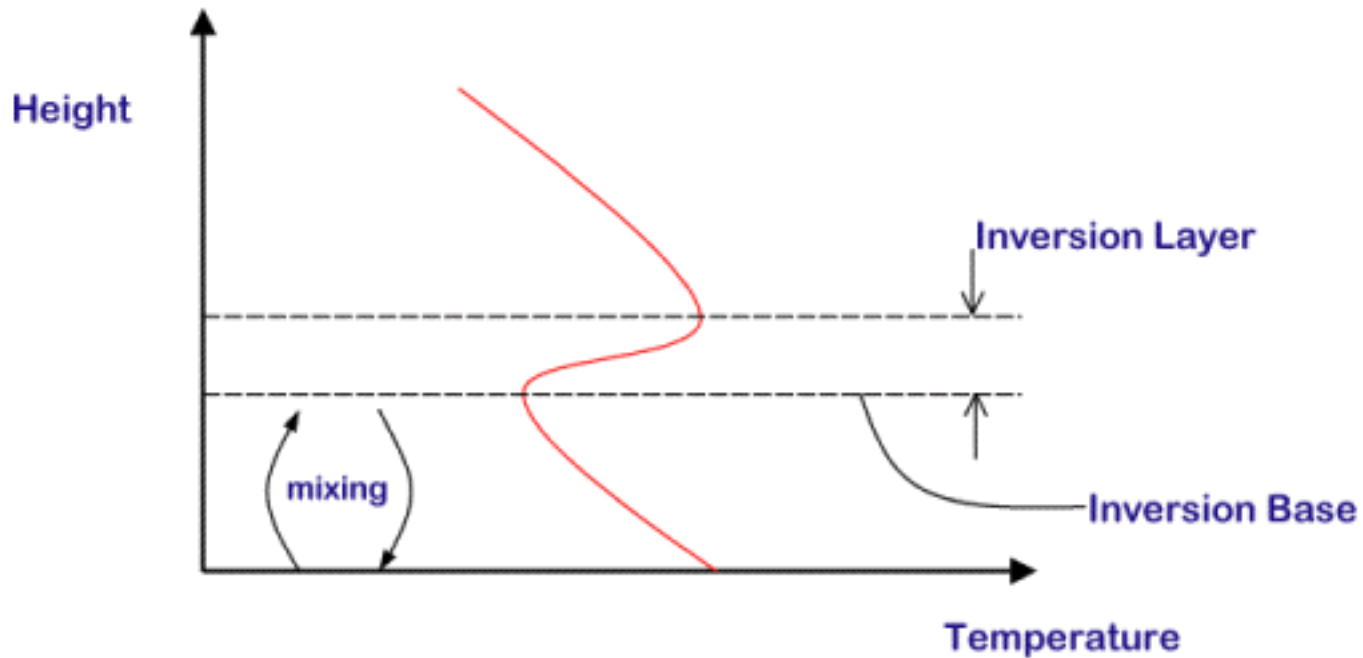
vast majority of clouds in this region during MJJAS are marine stratus



- within So. Cal Bight region, warm SST preceded negative marine stratus anomaly

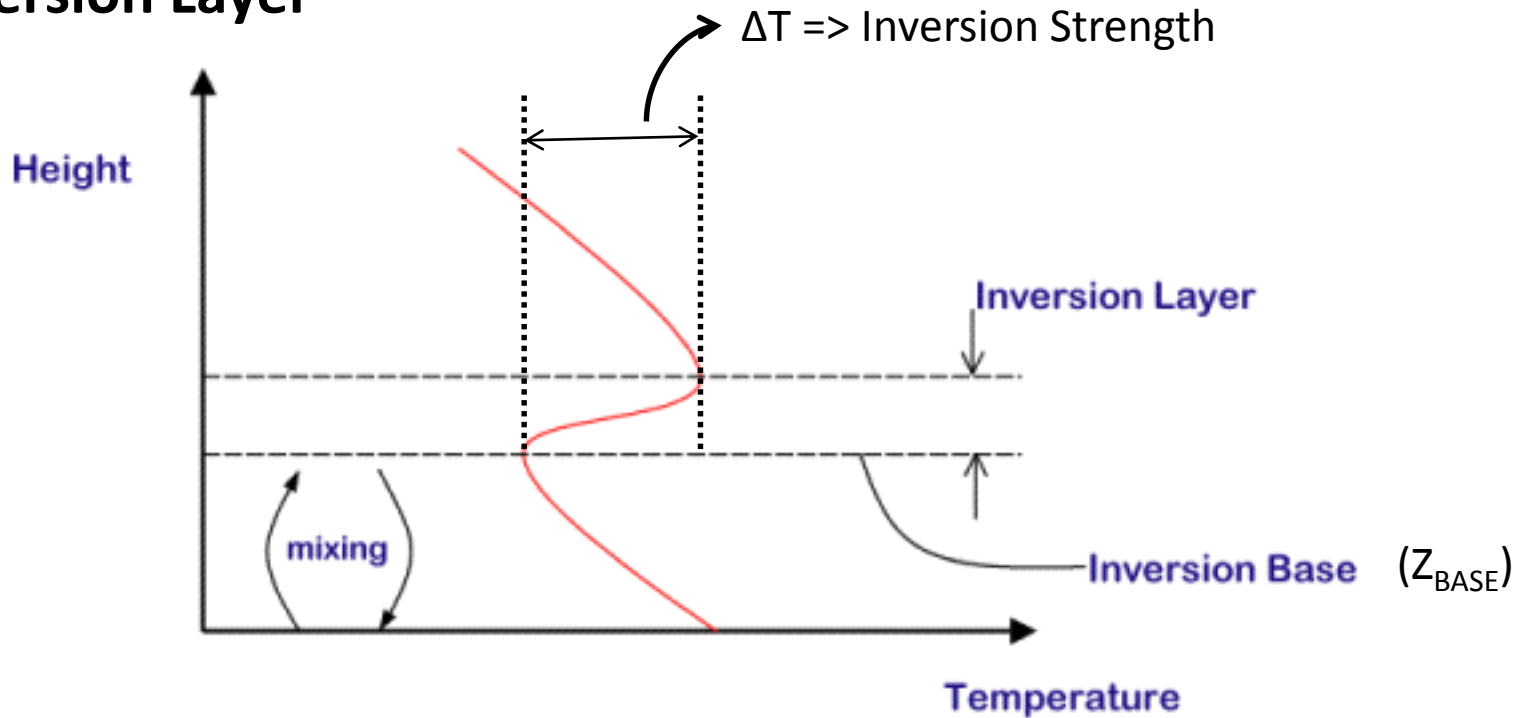
- Inversion Layer:** - Prominent feature along California Coast
- Marine stratus forms beneath inversion

Inversion Layer



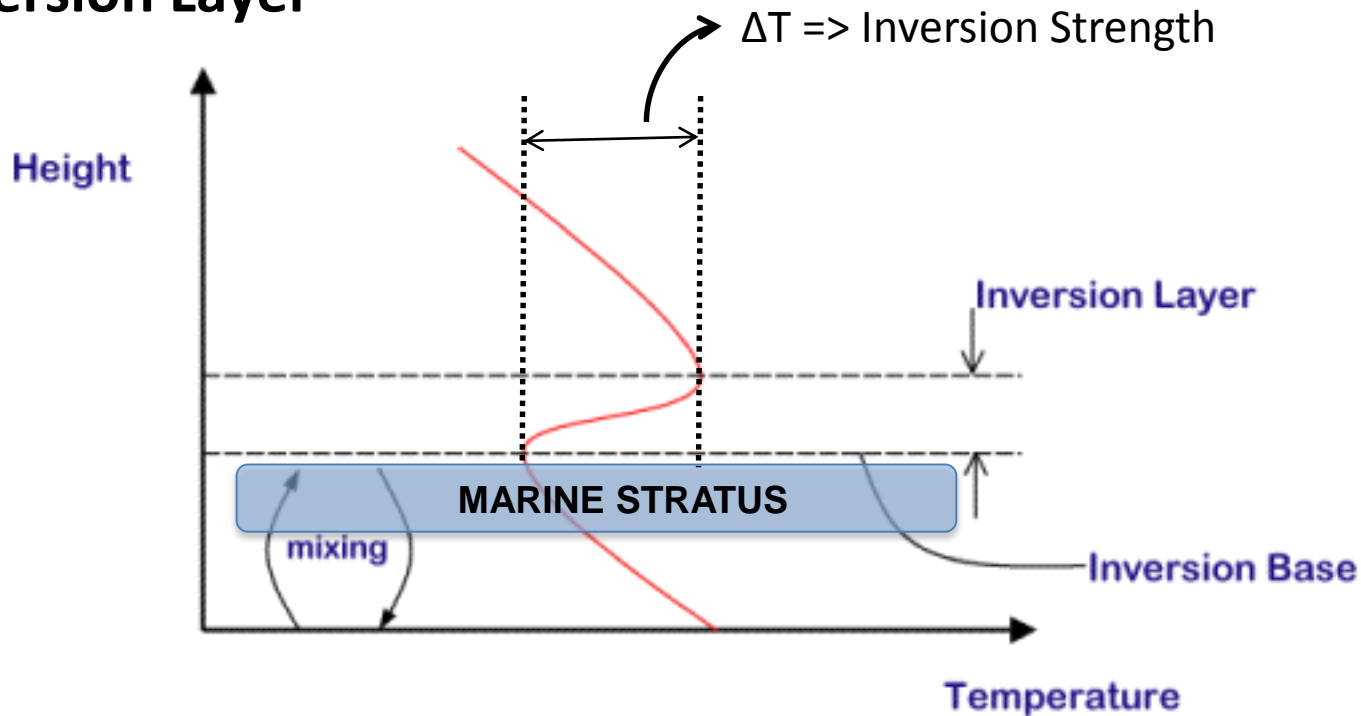
- Inversion Layer: - Prominent feature along California Coast**
- Marine stratus forms beneath inversion**

Inversion Layer



- Inversion Layer:** - Prominent feature along California Coast
- Marine stratus forms beneath inversion

Inversion Layer



Warmer SST \Rightarrow Weaker inversion
 \Rightarrow more difficult for clouds to form and persist

MJJAS 2014 Inversion Strength $\sim 1^\circ$ C (15%) weaker than normal
(San Diego/Miramar Radiosonde)

Summary

- SST warm along most of CA coast during Summer 2014
- Summer marine stratus amount much below norm in 2014
- Warm SST preceded decreased marine stratus
- SST influences strength of inversion and marine stratus
- Potential for positive radiation feedback on SST