

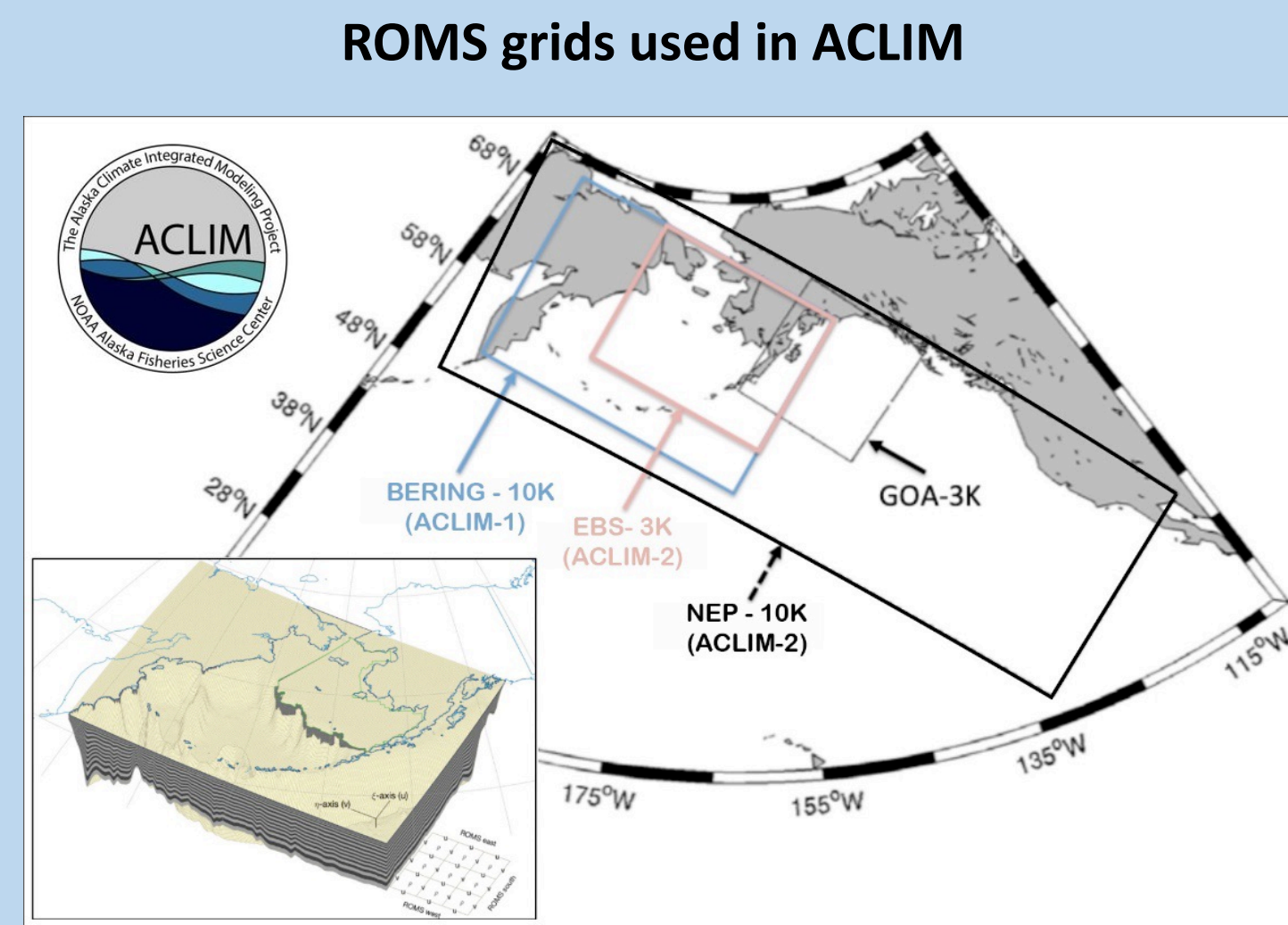
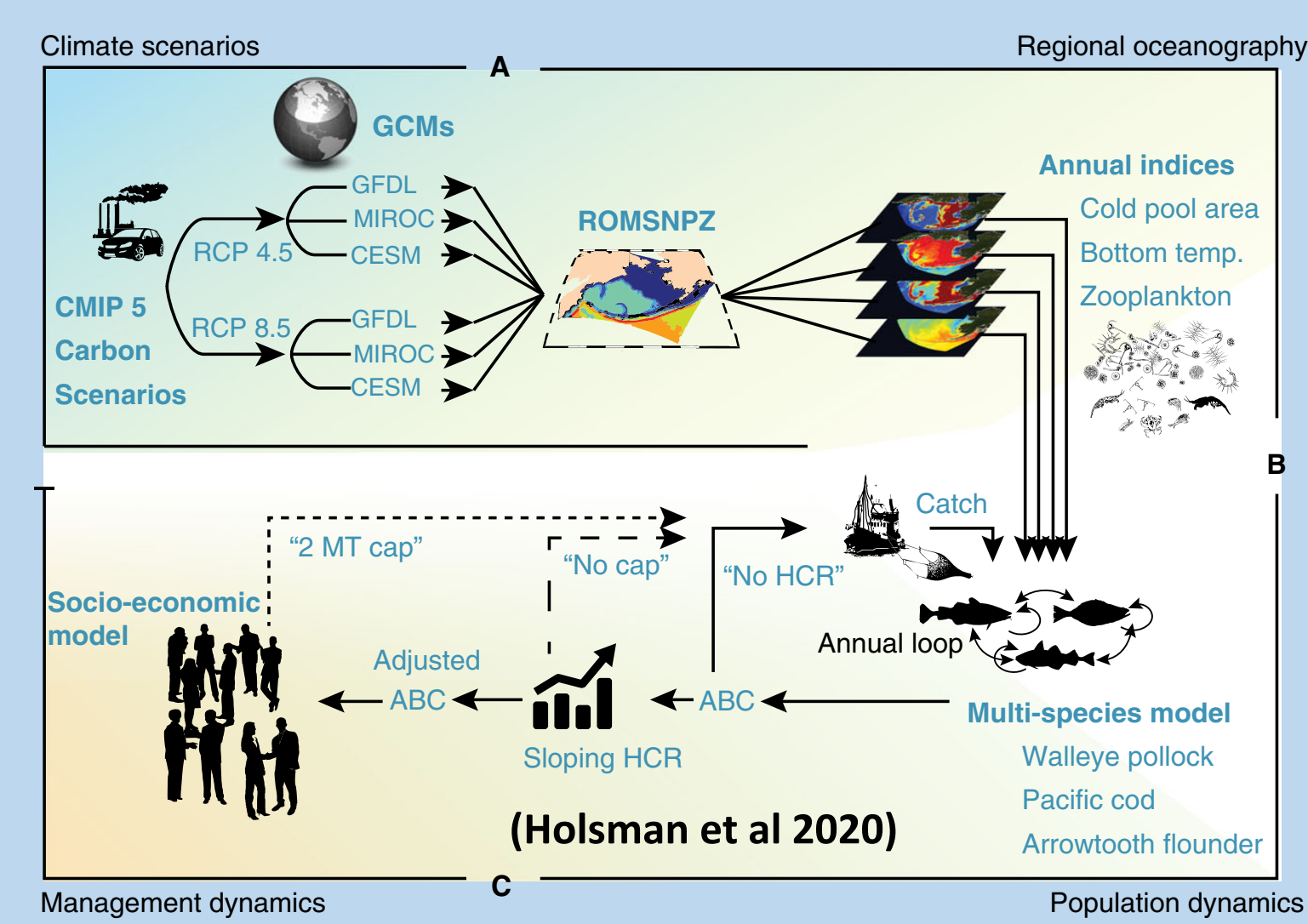
# Dynamical downscaling of projected conditions over the 21st century in the Northeast Pacific

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## ABSTRACT

As a component of the Alaska Climate Integrated Modeling programs (ACLIM and GOACLIM) we are simulating present and future biophysical ocean dynamics on a nested set of regional grids using the Regional Ocean Modeling System (ROMS). Biogeochemical results for the Bering Sea have been reported in Hermann et al. (2019, 2021) and Cheng et al. (2021); here, we focus on emerging projections for the Gulf of Alaska. Thus far we have downscaled GFDL global ESM projections under two potential greenhouse gas emission scenarios: ssp126 (a low emission scenario) and ssp585 (a high emission scenario). Where available, existing time series (here, from OWS-PAPA and GAK1) have been used to help validate the regional hindcasts. Results thus far indicate surface and shelf sea bottom warming of as much as 3 degrees C by 2100 under ssp585, with considerably reduced warming under ssp126.

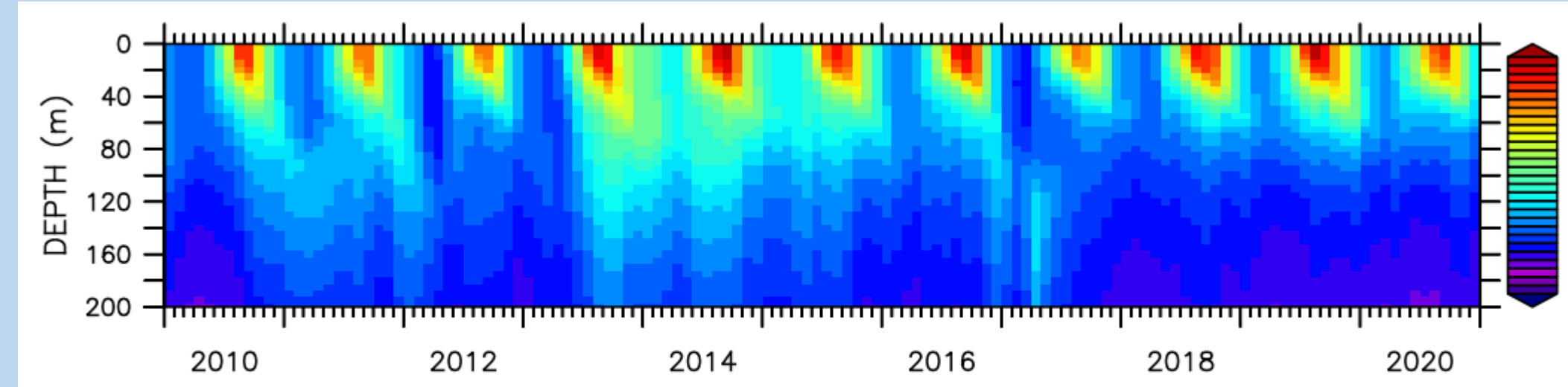
## Alaska Climate Integrated Modeling (ACLIM) projects: Downscaled climate projections used in fisheries management strategy evaluation



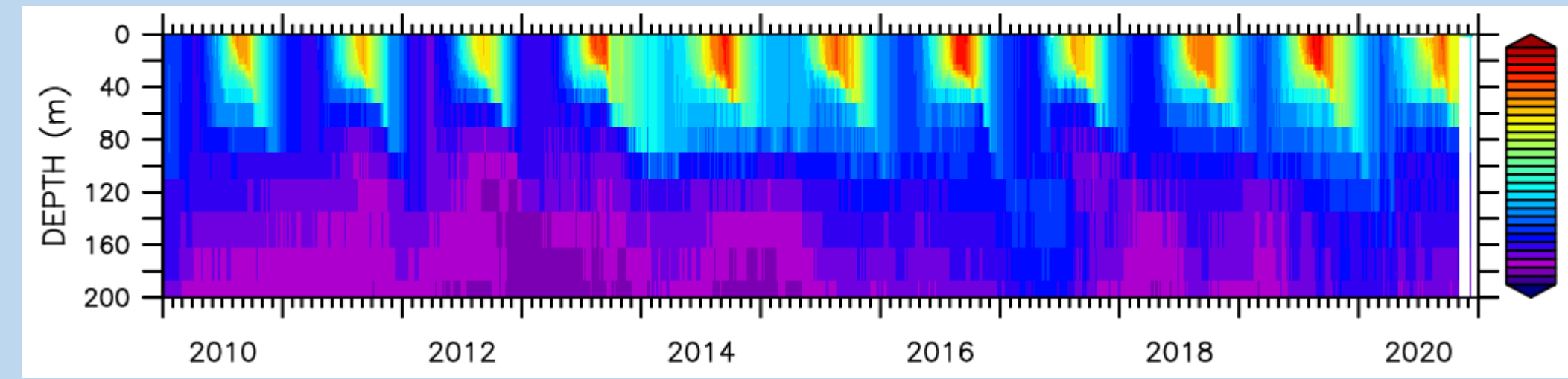
## Compare NEP-10K hindcast model temperatures (deg C) with station data

### OWS-PAPA

#### MODEL

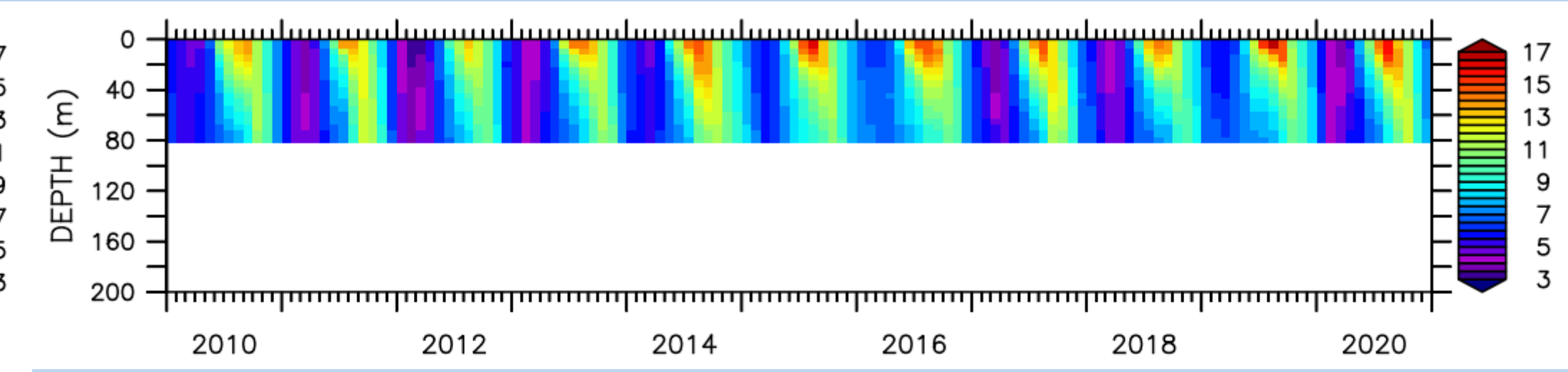


#### DATA

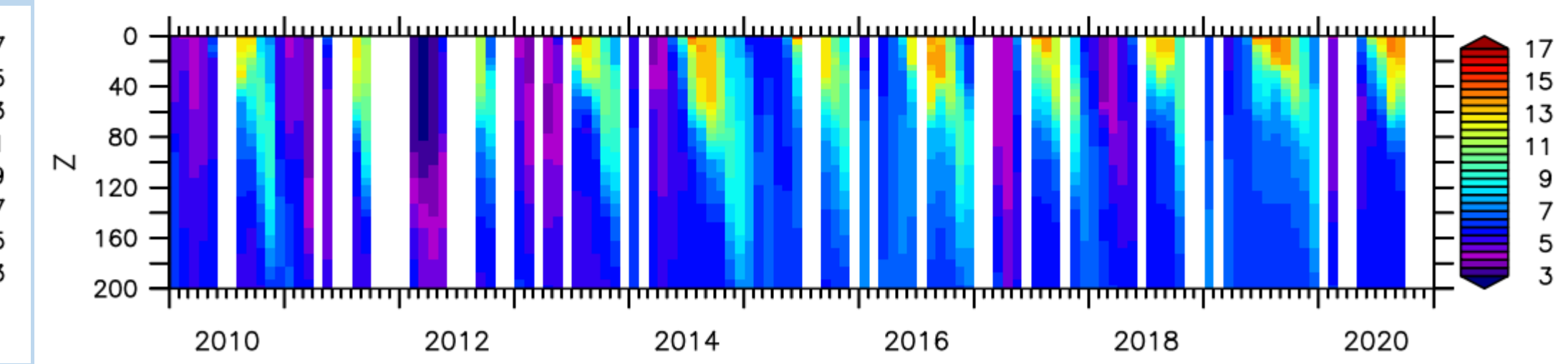


### UAF station GAK1 (near Seward AK)

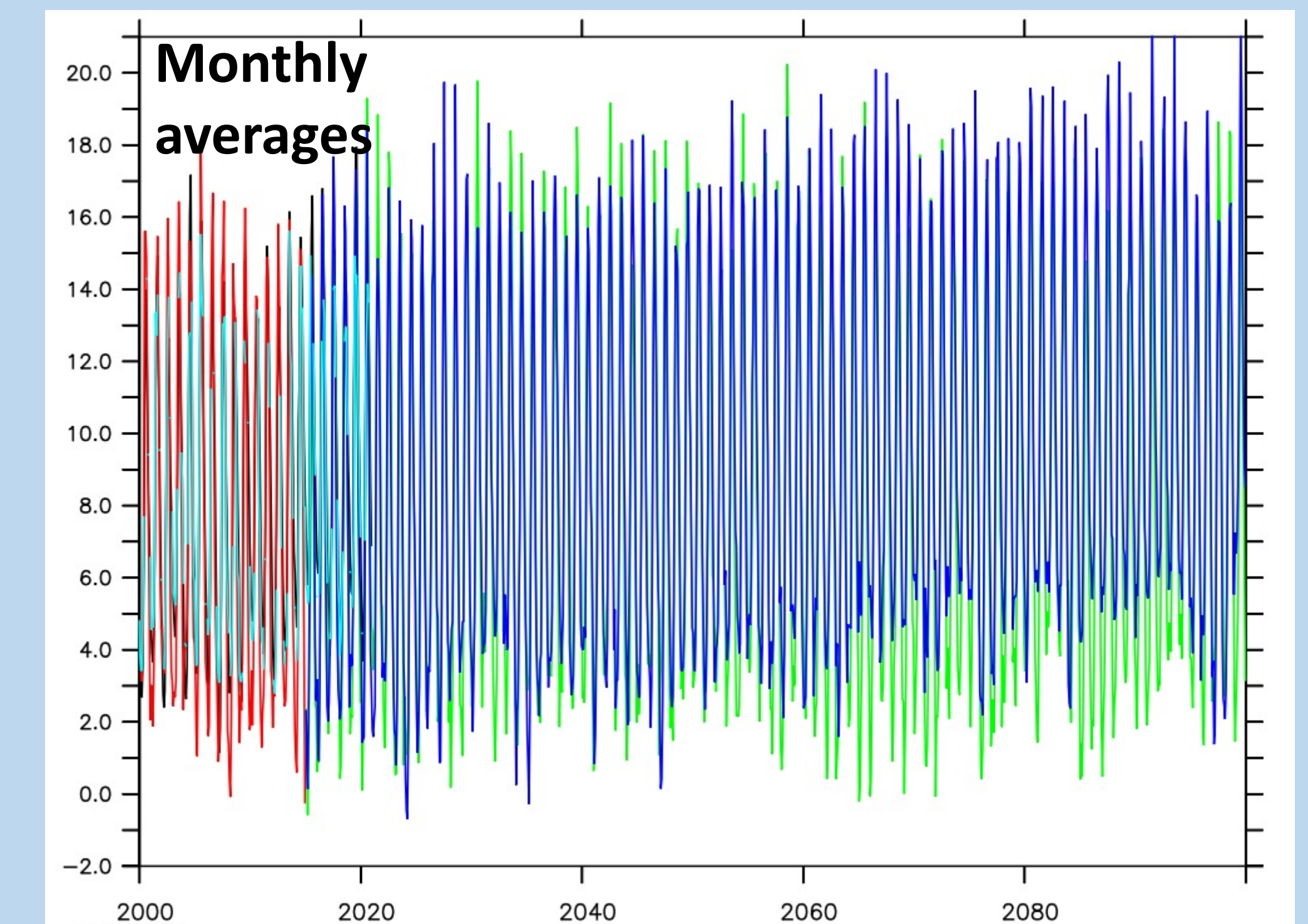
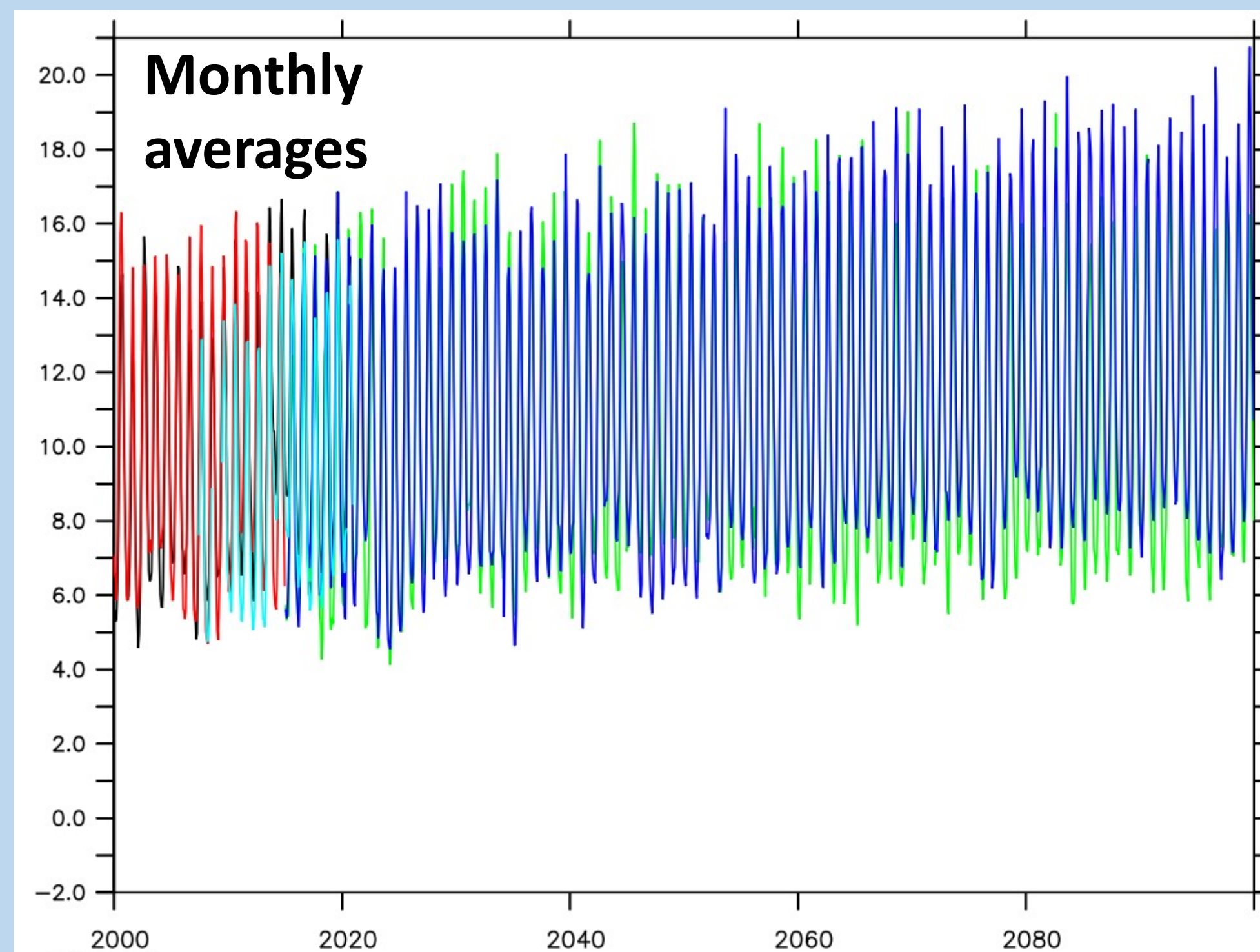
#### MODEL



#### DATA



## Compare and project SST time series at these stations

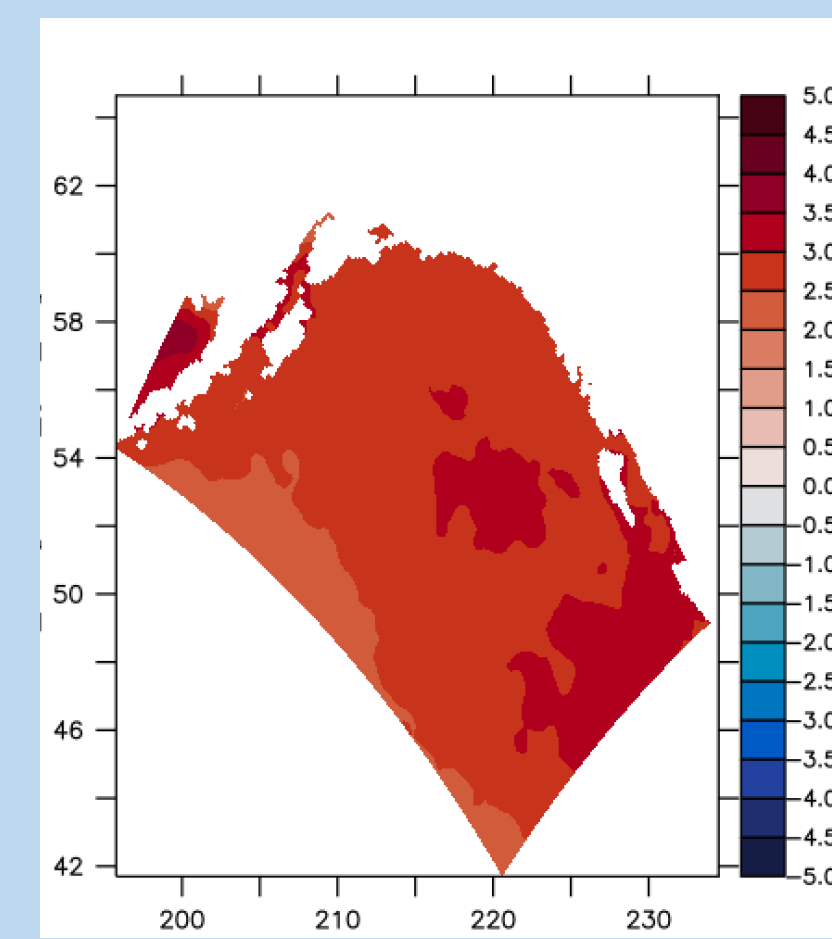
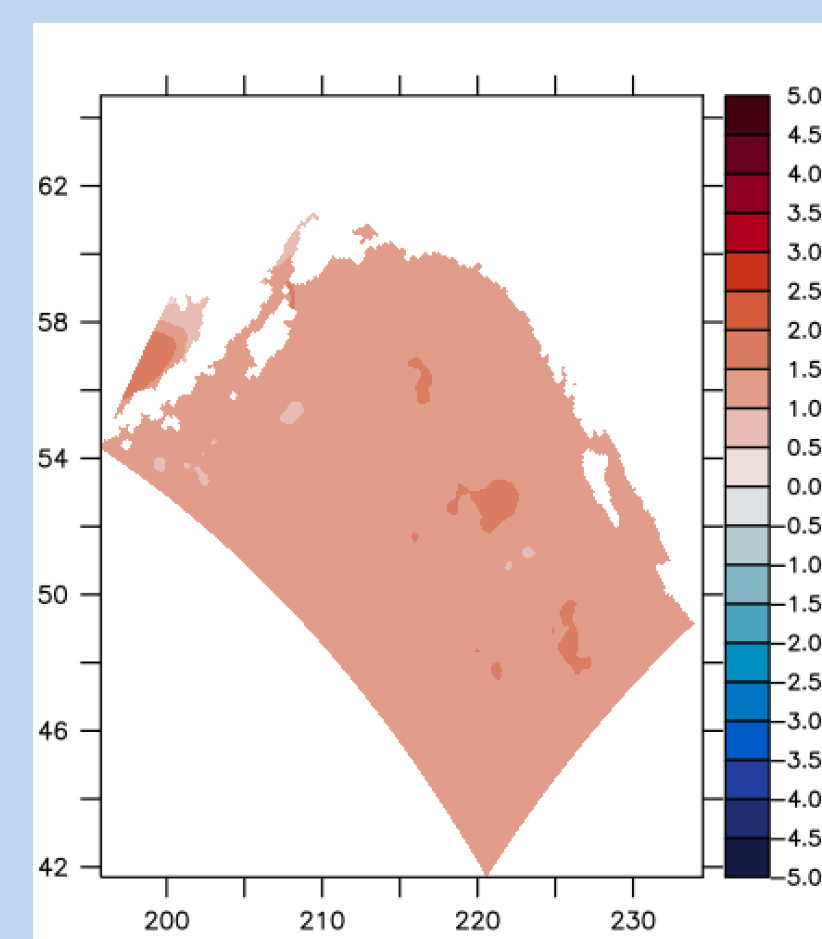


## Projected *change* in mean decadal temperatures (deg C), 2015-2024 -> 2080-2089

### ssp126

### ssp585

#### Surface temperatures



#### Bottom temperatures

