

Bren PhD Written Exam
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1. Use the definition of “teleconnected” (TE) and “weakly affected” (WA) locations in Hsiang, Meng and Cane (henceforth HMC), as shown in Fig. 1a and Supplementary Fig. 3, to assign ocean pixels as either TE or WA. Report maps showing TE and WA areas at the (a) pixel-level and (b) at the EEZ level.
2. Using total fishing hours at the EEZ-by-time level, estimate the ENSO-sensitivity of fishing hours separately for TE and WA EEZs (as defined in part 1(b)). Justify your model specification (i.e., controls, standard error assumptions, functional forms, etc) and choices made regarding how ENSO enters into your model (i.e., functional form, ENSO timing, etc). Report results.
3. Using total fishing hours at the EEZ-by-time level, estimate a “difference-in-difference” model of fishing hours for TE-EEZs relative to WA EEZs. Again, justify your model specification and choices made regarding how ENSO enters into your model. Report results. How does one interpret these estimates relative to those in part 2?
4. Discuss what the results in parts 2 and 3 tell us about the biophysical effects of ENSO versus the economic response to the biophysical effects of ENSO. Propose empirical tests for separating these two effects (you don’t need to implement these tests).
5. Reproduce parts 2 and 3 but use foreign fishing effort share (i.e., foreign fishing hours divided by total fishing hours) as the outcome. Report results and provide an interpretation of these results.
6. Describe the conceptual difference between statistical models that use (a) EEZ as the unit of analysis and (b) fisher person as the unit of analysis. What questions can be answered with empirical analysis designed around (a)? What can be answered using (b)? What are the statistical, data, or technical challenges associated with statistical models based on (a) and (b)?
7. Describe ways in which historical ENSO variation provide a useful analog for understanding future anthropogenic climate change (ACC). Describe the elements of future ACC that are missing when one only studies historical ENSO variation, and what are potential implications of these missing elements for forecasts of future ACC impacts.