BOEM
BUREAU OF OCEAN ENERGY MANAGEMENT

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23	PO	Expansion of West Coast Oceanographic Modeling Capability	1
25	IN (HE/SE)	Potential Impacts of Submarine Power Cables on Crab Harvest	2
27	MM	Data Synthesis and High-resolution Predictive Modeling of Marine Bird Spatial Distributions on the Pacific OCS	3
29	IN (HE/SE)	Archaeological and Biological Assessment of Submerged Landforms off the Pacific Coast	4
31	IM	West Coast Information Transfer Meeting	5
33	**FE**	**Predicting and Detecting the Effects of Climate Change and Ocean Acidification Using Long-term Ecological Data**	**6**
35	FE	Understanding and Mitigating the Effects of Marine Renewable Energy Technologies on the Coastal and Marine Environment in the Pacific OCS Region	7
37	HE	Collecting and Archiving Invertebrates from MARINe Sites for Deposition in the Smithsonian Institution with Local Replicate	8
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41	HE	Strategic Resampling of Biodiversity Surveys at MARINe Sites: Completion of the Decadal Assessment	10

FE = Fates & Effects   IN = Interdisciplinary
HE = Habitat & Ecology   MM = Marine Mammals & Protected Species
IM = Information Management   PO = Physical Oceanography   SE = Social & Economic Sciences

Discipline	Title	Rank
FE	**Predicting and Detecting the Effects of Climate Change and Ocean Acidification Using Long-term Ecological Data**	6
Needed now to describe potential shifting environmental baseline for NEPA analyses		
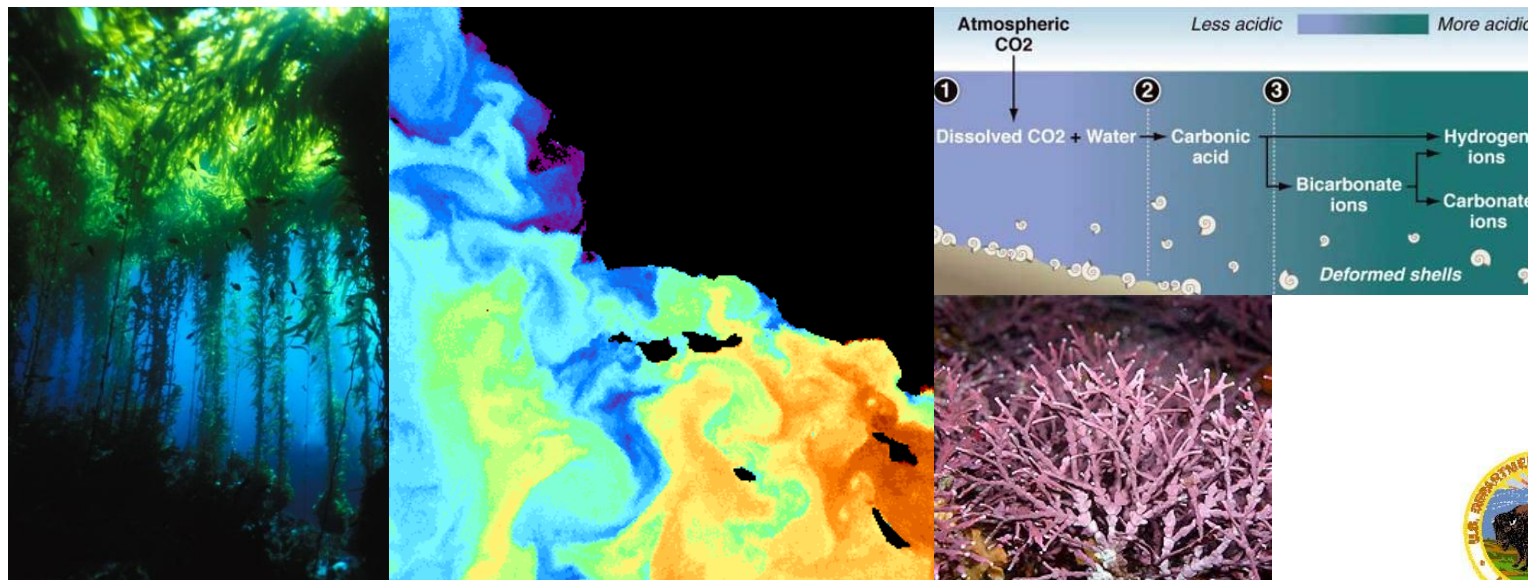
BOEM Information Need:

- Describe environmental baseline at large spatial and temporal scales of calcifying species sensitive to ocean pH shifts

- Impact Analysis - significance levels against background variability

- Identify potential compensatory responses

51 sites
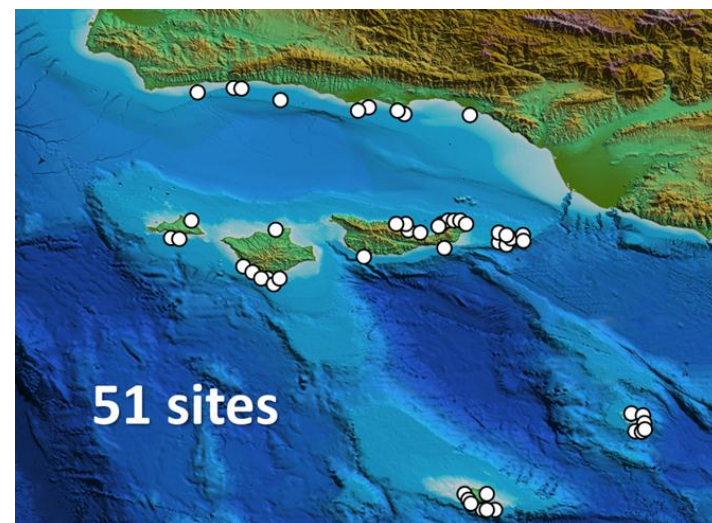
Relationship to Previous and Ongoing BOEM-Supported Research:

DOI Partnership: Distinguishing Between Human and Natural Causes of Change in Nearshore Ecosystems Using Long-term Data from DOI Monitoring Programs

BOEM Objectives:

- Predict how global climate change and ocean acidification will alter rocky reef ecosystems in southern California

- Detect effects already underway

Study Methods:

- Build upon previous analyses of factors identified as drivers in rocky subtidal communities

- Structural equation modeling used to isolate effects of drivers

- Classify species in the long-term data based on vulnerability to acidification
    - Reliance on calcification
    - Aragonite dependence

- Spatial gradients in upwelling used to test whether species vulnerable to acidification have suffered steeper declines in areas characterized by more corrosive upwelled waters