### *1-E. What are the major scientific themes?*

The major scientific themes are:

1. Tsunamis and Other Long-period Ocean Waves
2. Equatorial Oceanography
3. Climate
4. Fisheries Oceanography
5. Tropical Meteorology
6. Coastal Research

### *1-E-1. How were they identified?*

1. Tsunamis and Other Long-period Ocean Waves

This theme preceded the creation of JIMAR. In 1967 NOAA and the University realized they had a strong mutual interest in improving scientific understanding and prediction/warning of tsunamis. This became apparent after the great Alaska earthquake and tsunami of 1964. The Joint Tsunami Research Effort (JTRE) was incorporated in JIMAR at its founding. Most JTRE personnel are gone but the theme continues. JIMAR and Hawaii Sea Grant have supported joint efforts on improving run-up modeling.

2. Equatorial Oceanography

This original JIMAR theme has some overlap with the Climate theme. This effort has been at the basis for JIMAR efforts in understanding ENSO but has more fundamental elements. Founding Director Dennis Moore and his collaborators continue fundamental research on the behavior of the equatorial oceans and their roles in global and basin ocean circulations.

3. Climate

Again an original theme, the JIMAR Climate theme linked the equatorial oceanography research to the atmosphere. Programs like the UH Sea Level Center originated with equatorial observations but have expanded and are part of NOAA's ENSO monitoring system and thus quasi-operational. Some programs such as PEAC should become operational eventually. The climate theme began with observing and describing/understanding ENSO, migrated to development of seasonal-to-inter-annual climate prediction, and now incorporates development of climate services.

4. Fisheries Oceanography

This theme has two major elements:

a. collaborations with the Pacific Islands Fisheries Science Center

b. the Pelagic Fisheries Research Program

The Honolulu Laboratory of the Southwest Fisheries Science Center (NMFS), located adjacent to the UH Manoa campus had more than fifty years of history. The facility is now the Pacific Islands Fisheries Science Center embedded within the new Pacific Islands Region of NMFS.

The PFRP arose out of concerns by fisheries regulators (the Western Pacific Fisheries Management Council) over how to respond to inclusion of pelagic species to their suite of management responsibilities. PFRP began as a congressional incentive but has evolved into a line-item in the NMFS budget.

The fisheries themes have added substantial breadth to JIMAR's suite of scientific specialities. Fisheries brings a strong social sciences component. The Honolulu Lab has expanded staffing in the social sciences, and PFRP regularly supports socio-economic research.

5. Tropical Meteorology

A tropical meteorology theme was created in concert with the NWS as part of the relocation of the Honolulu Forecast Office to the UH Manoa campus. This was consistent with the goals of the modernization of the NWS in the late 1980's to 1990's. JIMAR promotes research utilizing the output from the modernization applied to regional (local) issues. In 1998 two NOAA scientists from the Hurricane Research Division/AOML joined the JIMAR Senior Fellows and interactions between JIMAR and HRD have flourished.

6. Coastal Research

This theme arose out of interactions between UH scientists and NOAA scientists at the Coastal Services Center, Charleston, SC. It is the newest theme (approved in 2001). The scope includes the entire Hawaiian chain, the northwest sections of which are now subject of intense study. Since the creation of this theme, a coastal services office has been created in Honolulu.

***1-E-2. Which themes/sub-themes are near completion?***

Themes are sufficiently broad as to have indefinite lives. The most obvious sub-theme near completion would be PEAC. As GPS meteorology develops, that sub-theme should mature as well. The PFRP funds about 20 projects a year and a number of those have ended.

### *1-E-3. What are the emerging thematic areas?*

Emerging thematic areas are ecosystems approaches to fisheries and integrated observations. Each of these has evolved from a variety of isolated efforts among a number of scientists and appear in the NOAA strategic vision. In the area of observations, NOAA has embraced the leadership in developing integrated climate observations and coastal observing systems. UH scientists have previously proposed an NSF science and technology center (STC) which would emphasize ocean observations and research. This proposal did not succeed but the need for such a center was brought to the attention of a number of colleagues.