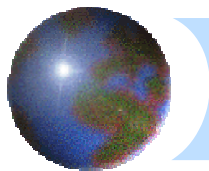


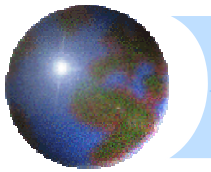
WORKSHOP OBJECTIVES

- **DEVELOP A MORE COMPLETE UNDERSTANDING OF REGIONAL VULNERABILITY AND**
- **STRENGTHEN AND ENHANCE A CONTINUING, INTERACTIVE DIALOGUE TO SUPPORT DECISION MAKING**



Pacific Islands Climate Assessment

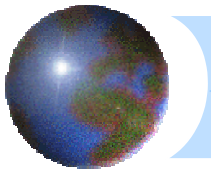
- **Pacific regional contribution to the first U.S. National Assessment** of the Consequences of Climate Variability and Change
- **Steering Committee** for overall guidance
- **Focus on U.S.-affiliated Pacific jurisdictions** within regional context—with links to related climate programs and activities in the region



Pacific Islands Regional Assessment

Overarching Goal

NURTURE THE ***CRITICAL PARTNERSHIPS***
NECESSARY ***TO DEVELOP AND USE***
CLIMATE INFORMATION TO ENHANCE
THE ABILITY OF SCIENTISTS AND
DECISION MAKERS THROUGHOUT THE
PACIFIC ***TO UNDERSTAND AND***
RESPOND TO THE CHALLENGES AND
OPPORTUNITIES PRESENTED BY
CLIMATE VARIABILITY AND CHANGE

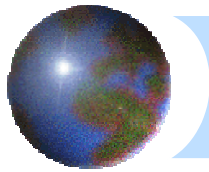


Pacific Islands Climate Assessment

- ✿ Combine research/analysis with dialogue and education
- ✿ Extensive involvement of stakeholders and scientists throughout the region:

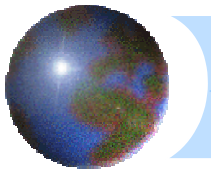
Assessment as process of shared learning and joint problem-solving





Pacific Islands Climate Assessment

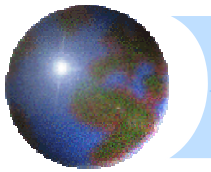
- Highest priority on **water resources, public health and safety (extreme events) and challenges for coastal communities** and ecosystems
- **Address today's problems today** (natural variability) **and plan for the future** (climate change)
- **Start with historical analysis** of climate patterns, impacts and responses (already underway)



Workshop on Climate and Island Coastal Communities

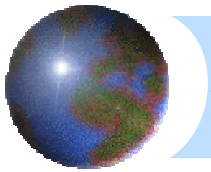
Workshop Organization

- **Opening Plenary** – Providing a cultural and scientific context for deliberations
- **Small-Group Discussions** of Key Issues – Impacts and Responses
- **Plenary Discussion** of Key Findings, Recommendations and Next Steps



Workshop Reference Materials

- **Background Paper** – A work-in-progress
- **Key chapters from the U.S. National Assessment** – Islands, Coastal, Native Peoples
- **Report of 1998 regional workshop**
- Regional summary of **model-based scenarios**
- **Plenary presentations & statements**
- Selected **background readings**/references



Workshop on Climate and Island Coastal Communities

Exploring “**vulnerability**” involves issues of:

● **EXPOSURE**

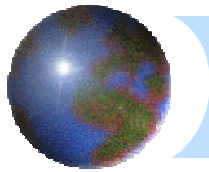
● **SENSITIVITY**

● **ADAPTIVE CAPACITY/RESILIENCE**

WITH A FOCUS ON

● **CULTURAL CONTEXTS AND**

● **PROMOTING APPROPRIATE ACTION**

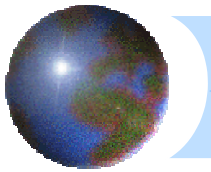


Workshop Goal

**TO BRING EXPERTS FROM DIVERSE
BACKGROUNDS TOGETHER TO *SHARE
KNOWLEDGE AND PURSUE
INNOVATIVE PARTNERSHIPS***

**TO ENHANCE THE ABILITY OF ISLAND
COMMUNITIES TO RESPOND TO
CLIMATE-RELATED CHALLENGES AND
OPPORTUNITIES...**

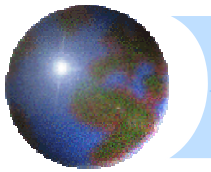
CREATING AN *AHA COUNCIL* FOR CLIMATE



Pacific Islands Regional Assessment

Underlying Assumptions

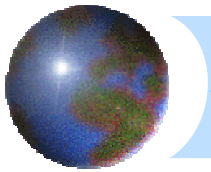
- Understand & address climate in context of other economic, social & environmental stresses
- Understand current patterns of natural variability and how they might change
- Address today's problems today while planning for the future



Pacific Islands Regional Assessment

Underlying Assumptions

- Appreciate special circumstances of island communities (size, isolation, resource limitations)
- Required data sets often missing or inaccessible; limited research/information on regional consequences
- Infrastructure and community services already stressed

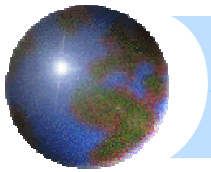


Pacific Islands Regional Assessment

Underlying Assumptions

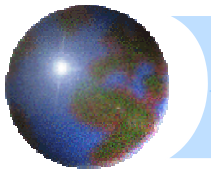
❖ Critical need to reduce the “information gap” between scientists and decision makers

Address scientific, institutional and communication barriers/opportunities



Pacific Islands Regional Assessment Information Needs

- Regional climate information (temperature, rainfall, trade winds, tropical storms, etc.)
- Patterns of resource use, ecosystem change and species diversity (local, island, regional)
- Changing environmental, demographic and economic patterns and trends
- Value of climate information for decision making
- Nature and consequences of response options—adaptation as well as mitigation



Workshop on Climate and Island Coastal Communities

Exploring “**vulnerability**” involves issues of:

● **EXPOSURE**

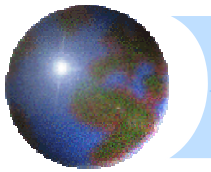
● **SENSITIVITY**

● **ADAPTIVE CAPACITY/RESILIENCE**

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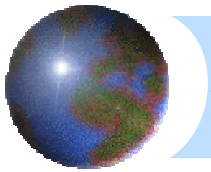
● **PROMOTING APPROPRIATE ACTION**



Workshop on Climate and Island Coastal Communities

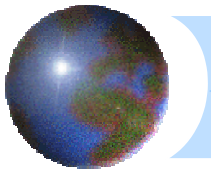
KEY QUESTIONS

- ❖ **WHAT SYSTEMS, COMMUNITIES, ACTIVITIES ARE PARTICULARLY SENSITIVE TO CLIMATE AND WHY?**
- ❖ **HOW MIGHT WE ACT TO ENHANCE THE ADAPTIVE CAPACITY/RESILIENCE OF THESE SYSTEMS, COMMUNITIES AND ACTIVITIES?**



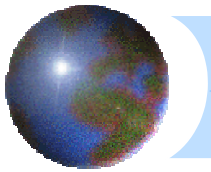
Workshop on Climate and Island Coastal Communities

- **WHAT INFORMATION IS NEEDED TO REDUCE SENSITIVITY OR BUILD RESILIENCE? AND**
- **HOW CAN SUCH INFORMATION BE USED TO SUPPORT PLANNING, POLICY FORMULATION AND DECISION MAKING?**



Pursuing Partnerships to:

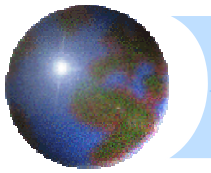
- **Fill information gaps through research, monitoring, modeling and assessment**
- **Improve access to useful and usable information**
- **Develop effective response strategies (adaptation and mitigation)**
- **Promote education and dialogue—
shared learning & joint problem solving**



Workshop on Climate and Island Coastal Communities

KEY ISSUES/TOPICAL AREAS

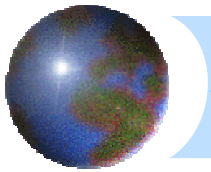
- Providing Access to **Fresh Water**
- Protecting **Public Health**
- Ensuring **Public Safety & Protecting
Community Infrastructure**
- Sustaining **Tourism**
- Sustaining **Agriculture**
- Promoting Wise Use of **Coastal & Marine
Resources**



Providing Access to Fresh Water

Some Initial Thoughts

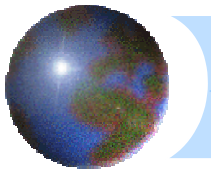
- ⊕ Limited (natural) storage capacity
- ⊕ Dependence on rainfall; subject to seasonal and year-to-year variations
- ⊕ Increasing demand – population growth and economic development
- ⊕ Infrastructure constraints
- ⊕ Institutional challenges



Protecting Public Health

Some Initial Thoughts

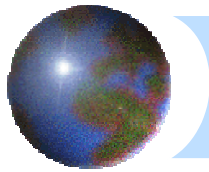
- Direct effects via changes in temperature, water & extreme events
- Indirect effects on disease vectors & pathogens
- Links between drought and nutrition
- Cultural considerations
- Public health infrastructure already stressed



Public Safety & Community

Infrastructure – Some Initial Thoughts

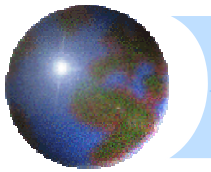
- Extreme events – today's problems and tomorrow's challenges (storms, droughts, floods)
- Changes in current patterns of exposure
- Sea level rise as an exacerbating factor
- Infrastructure in low-lying areas
- Threats to "lifeline facilities" – communication, transportation, waste management, etc.



Sustaining Tourism

Some Initial Thoughts

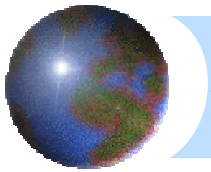
- Current challenges and future planning
- Reliance on sensitive natural resources (e.g., coral, forests, fisheries)
- Consequences for facilities, critical infrastructure and support services
- Access to water
- Changes in tropical storm patterns
- Health-related impacts



Sustaining Agriculture

Some Initial Thoughts

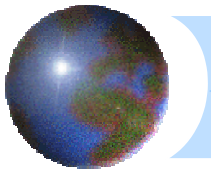
- Subsistence, food supply and commercial implications
- Cultural considerations
- Current challenges and future planning
- Extreme events – droughts, tropical storms and storm surge
- Implications of sea level rise – saltwater intrusion, inundation of coastal areas, exposure to storms/storm surge



Marine and Coastal Resources

Some Initial Thoughts

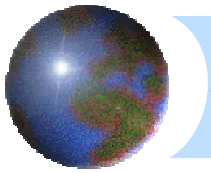
- ➊ Direct impacts on critical coastal resources and habitats (e.g., coral reefs, mangroves, beaches)
- ➋ Consequences for economically-significant fisheries (e.g., tuna) and/or key sectors (e.g., tourism)
- ➌ Multiple stresses (rainfall, temperature, sea level and human activities)
- ➍ Long-term trends and extreme events



CLIMATE CHANGE IMPACTS ON THE U.S.—ISLANDS

MODELS SUGGEST CHANGES IN:

- **NATURAL VARIABILITY (e.g., EL NIÑO)**
- **TROPICAL CYCLONES**
- **INCREASED OCEAN TEMPERATURES**
- **CHANGES IN OCEAN CIRCULATION**
- **CHANGES IN SEA LEVEL (PERIODIC CHANGES AND SUSTAINED RISE)**

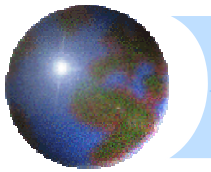


EXPLORING VULNERABILITY

 **EXPOSURE**

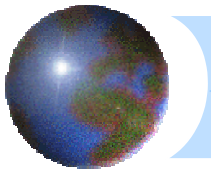
 **SENSITIVITY**

 **ADAPTIVE CAPACITY
(RESILIENCE)**



CLIMATE & ISLANDS WORKSHOP: SOME KEY FINDINGS

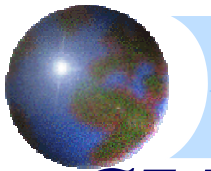
- Continue **dialogue among experts from all knowledge groups** – ***AHA COUNCIL*** for climate
- Achieve **balance between “intellect” and “intuition”**
- Commit to a **meaningful integration of traditional knowledge** – the past as key to the future; role of traditional leaders



CLIMATE & ISLANDS WORKSHOP: SOME KEY FINDINGS

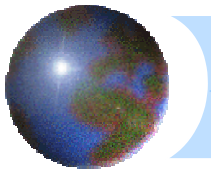
☉ Enhance Interpretation and Communication

- ☐ Produce useful and usable products**
- ☐ Utilize “information brokers” and cultural translators – building trust essential**
- ☐ Explore new technologies to develop and convey information**



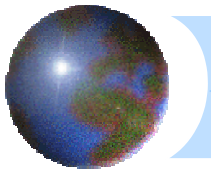
CLIMATE & ISLANDS WORKSHOP: SOME KEY FINDINGS

- **Pursue pro-active (vs. reactive) policy**
 - **Sustained commitment to adaptation – actions and dialogue**
 - **Integrate planning/decisions/policies** across levels of government and with donor agencies
 - **Address today's problems** (e.g., El Niño) while planning for future – learn by doing



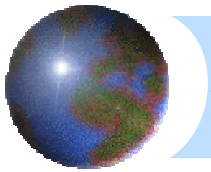
CLIMATE & ISLANDS WORKSHOP: SOME KEY FINDINGS

- **Recognize special characteristics of island communities**
 - "One Size Does Not Fit All"
 - Unique natural and cultural resources/assets
 - Geographic size, isolation and limited resources constrain some response options
 - Traditional adaptation practices & new options
 - Partnerships among island groups valuable



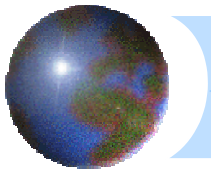
CLIMATE & ISLANDS WORKSHOP: SOME KEY FINDINGS

- **Special information needs, include:**
 - Extreme events
 - Natural variability as well as long-term trends
 - “Baseline” information for monitoring
 - Historical data sets – observations/insights from scientific and traditional sources
 - Local- (site-specific) and regional-scale information on climate processes and consequences



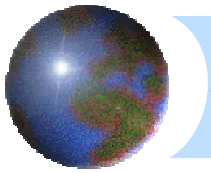
CLIMATE & ISLANDS WORKSHOP: SOME KEY FINDINGS

- **Build & Sustain Critical Partnerships**
 - Scientific community, government (all levels), businesses, community leaders, NGO's
 - Network of institutions (e.g., national weather services, universities and research institutions, regional organizations, industry and professional associations, donor agencies, etc.)
 - Multi-disciplinary science teams
 - Scientists AND other experts



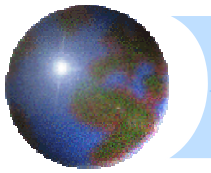
CLIMATE & ISLANDS WORKSHOP: SOME KEY FINDINGS

- Focus on **Vulnerability** in order to:
 - Understand **impacts** (exposure & sensitivity)
 - Address **resilience/adaptive capacity**
 - Develop **appropriate response options**
 - Engage all experts in **shared learning and joint problem-solving**



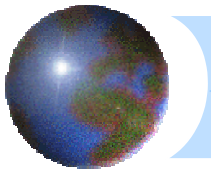
CLIMATE & ISLANDS WORKSHOP COASTAL & MARINE RESOURCES

- Human and biological communities
- Extreme events & range of variability vs. “means”
- Pro-active planning and actions to adapt & mitigate
- Integration of traditional knowledge & practices in analysis and action
- Actions appropriate to island settings – carrying capacity matters



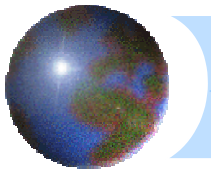
CLIMATE & ISLANDS WORKSHOP COASTAL & MARINE RESOURCES

- Actions appropriate to community values and goals
- Participatory process – full engagement of all experts and stakeholders
- Targeted education and capacity-building (e.g. planning boards)
- Effective interface between science and decision makers—information clearinghouse



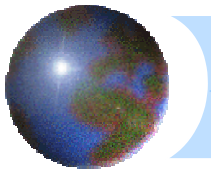
CLIMATE & ISLANDS WORKSHOP TOURISM

- Tourism extremely climate-sensitive— leadership opportunity
- Extreme events as a galvanizing focus
- Address the “keys” to tourism – safety, health and infrastructure
- Opportunity to look at alternative infrastructure options & changes in governance systems
- Address consequences for natural systems



CLIMATE & ISLANDS WORKSHOP TOURISM

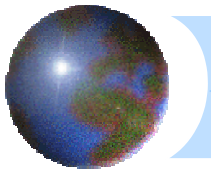
- Partnership among government, industry and the public essential—numerous stakeholders
- Opportunities for community dialogue and partnerships
- Develop baseline of today's impacts
- Establish effective weather/climate information system(s)—two-way dialogue
- Education a key



CLIMATE & ISLANDS WORKSHOP

WATER RESOURCES

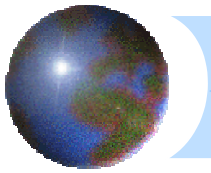
- Climate impacts on water affect nearly all human and natural systems and activities
- Recognize differences in island typologies (natural and human)
- Response options might involve economic instruments and legislation as well as education, training and information exchange



CLIMATE & ISLANDS WORKSHOP

WATER RESOURCES

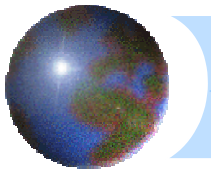
- Pursue watershed management, protection & restoration—traditional and modern approaches
- Develop multi-disciplinary/multi-cultural “watershed councils” (ahupua`a systems)
- Conduct integrated climate assessments for each island
- Integrate climate information in planning
- Building TRUST among partners essential



CLIMATE & ISLANDS WORKSHOP

AGRICULTURE

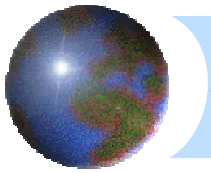
- Issues include drought, saltwater contamination, tropical cyclones—extremes
- Pursue pro-active, pre-disaster planning and preparedness
- Reduce vulnerability to today's climate events (e.g. extremes related to El Niño)
- Incorporate traditional knowledge & adaptations
- Closer link between science and agricultural community/sector



CLIMATE & ISLANDS WORKSHOP

AGRICULTURE

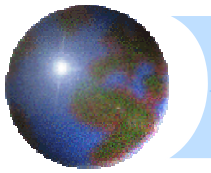
- Enhance adaptive capacity through:
 - Diversification (vs. mono-crop agriculture)
 - Drought and/or salt-resistant varieties
 - Integration of climate information in drought mitigation plans
 - Protection against invasive & alien species
 - Comprehensive land use policies/practices
 - Education and public awareness



CLIMATE & ISLANDS WORKSHOP

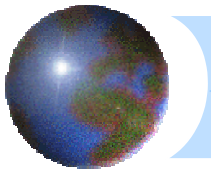
PUBLIC HEALTH

- Address vulnerable populations & communities – older, younger, lower-income, immune status, water quality/sanitation conditions
- Many climate-sensitive diseases/vectors
- Consider synergistic relationships e.g.,:
 - Drought/agriculture/nutrition
 - Drought/floods & diarrheal diseases
 - Global travel—spread of infectious diseases



CLIMATE & ISLANDS WORKSHOP PUBLIC HEALTH

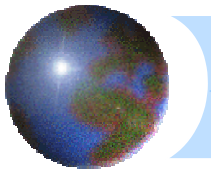
- Address key systems: infrastructure, sanitation, health care & emergency services, disaster planning/preparedness/relief, agriculture
- Understand and integrate local health knowledge
- Closer link between science, health sector and community leaders
- Education, communication, partnerships



CLIMATE & ISLANDS WORKSHOP

PUBLIC SAFETY & INFRASTRUCTURE

- Numerous climate-related risks -- tropical cyclones, winds, storm surge, drought, rains/flooding, sea level rise – and nearly all elements of infrastructure affected
- Water availability and quality particularly important/crucial
- Improve adaptive capacity for extreme events –addresses today's problems and reduces future vulnerability



CLIMATE & ISLANDS WORKSHOP

PUBLIC SAFETY & INFRASTRUCTURE

- ❖ Pro-active preparedness vs. reactive disaster relief – integrate climate in planning
- ❖ Local government and community engagement a key and
- ❖ Local research & information needed
- ❖ Public education & awareness essential
- ❖ Science-Community-Government Dialogue