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Centro Internacional para la Investigación del Fenómeno de El Niño

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**“The coastal environment:
building resilience through
sinergy in Latin America and
the Caribbean”**

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WCRP-LACC Conference
17-21 March 2014 , Montevideo-Uruguay

Acknowledgements

To **WCRP**, the organizing committee and the **IDB** for the kind invitation and support.

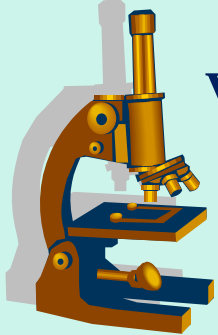
Agenda

1. Risk **management** and **adaptation**: a case study
2. Oceans: the big challenges
3. **Research** and **Operational** efforts to meet the challenges.
4. Potential **sinergy** of international initiatives.
5. Contributions to the **regional climate research agenda**

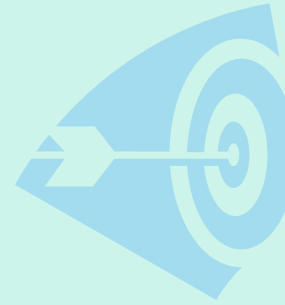
Risk management and adaptation



Climate and weather related hazards in the coastal zone: from global to local effects



Vulnerability assessment:
Social, economical and environmental issues



Risk assessment and **Impact** estimation



Response: risk management and adaptation strategies: **integrated coastal areas management**



Why to Assess vulnerability?

- To identify, **the social, economical and environmental elements** that make a community vulnerable.
- To better understand the **dynamics** of these elements over the territory (**SPATIAL**) and along the time (**TEMPORAL**).
- To have a **SPATIAL** approach of the vulnerability help to risk managers to **prioritize actions** in the ground.
- To have a **TEMPORAL** approach of the vulnerability help to **prospective risk management**, to **intervene over the critical** elements and assess the **impact** of these actions (**INDICATORS** and **ADAPTATIVE MANAGEMENT**).
- To work on risk management based on a comprehensive vulnerability assessment put to risk managers in the way **to solve the structural problems**, not just responding to the emergencies.

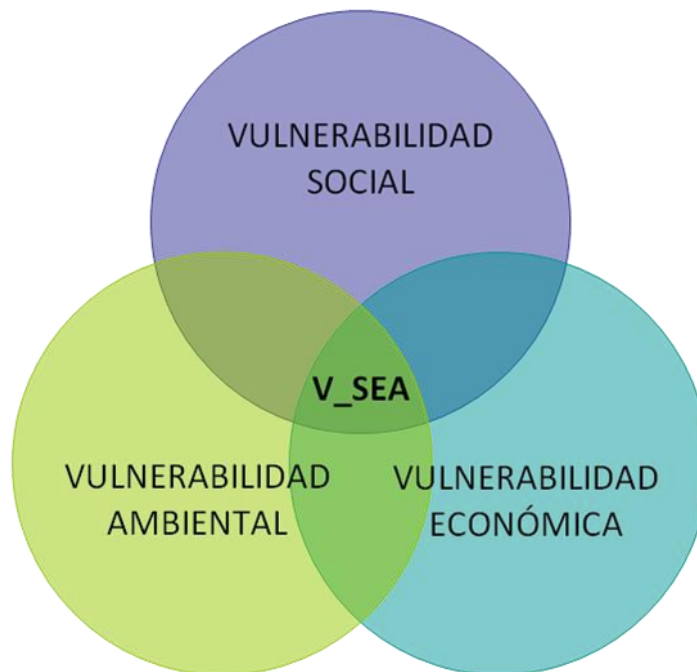
A LOCAL EXPERIENCE



**“Implementation of an
information system on sectoral
vulnerability for climate
variability and change in Guayas
Province, Ecuador”**



SOCIAL, ECONOMICAL AND ENVIRONMENTAL COMPONENTS OF CLIMATE VULNERABILITY



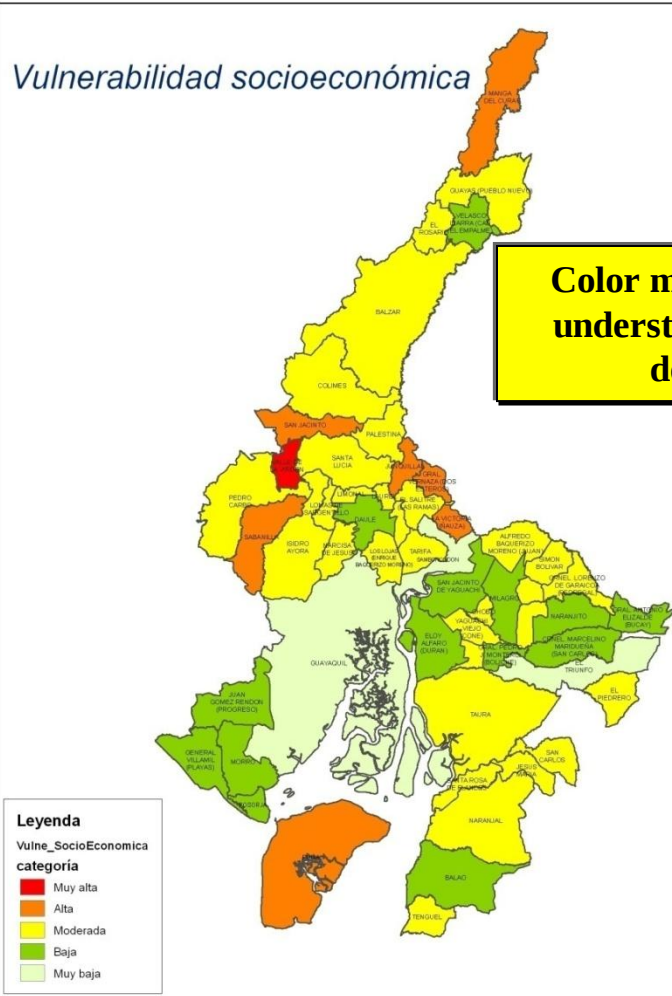
$$V_{SE} = (V_{AG} + V_{AC} + V_{TUR} + V_{GAN} + V_{IND} + V_{MIN}) - (CA_{CON-MOV} + CA_{ENER} + CA_{ACC_AG} + CA_{PROT_INUN}) + (V_{POB} + V_{SOC-CUL} + V_{SER-BAS} + V_{SOS_ECO}) - (CA_{E_EDU} + CA_{SAL} + CA_{ORG}) + (V_{FAC-NAT} + V_{FAC-DEGE}) - (CA_{JUR} + CA_{OPE} + CA_{PLAN})$$

CIIFEN, 2012

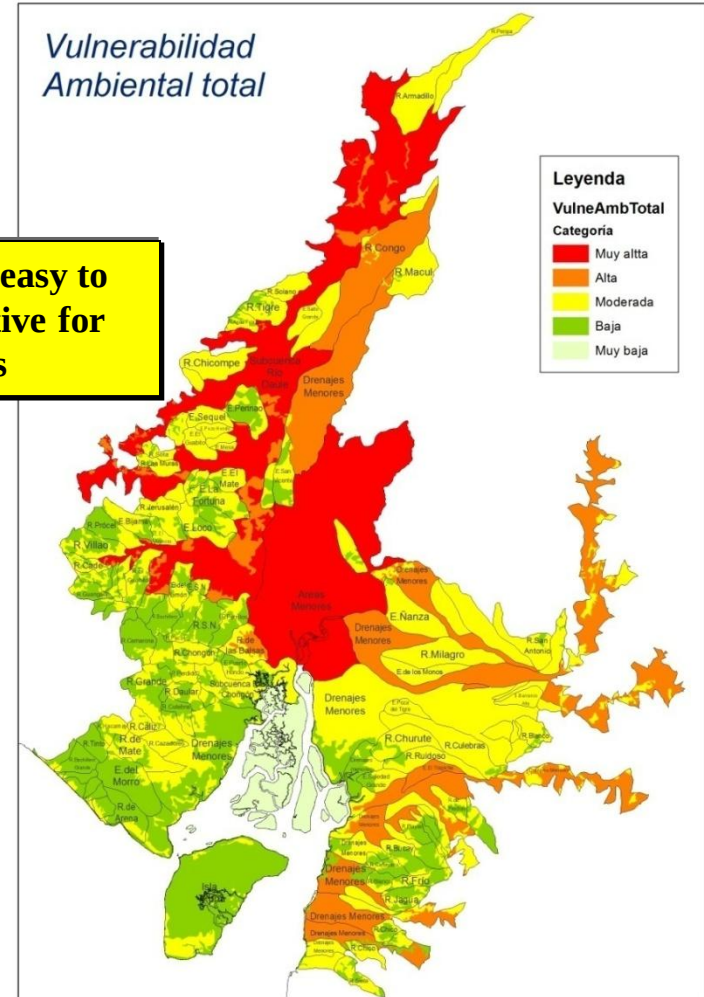
Only the integrated approach to the vulnerability can represent the reality and support decisions effectively.

SOCIAL-ECONOMICAL VULNERABILITY

ENVIRONMENTAL VULNERABILITY



Color maps are more easy to understand and intuitive for decision makers



ONLINE VISUALIZATION SYSTEM

[Inicio](#) [Acceso](#)



Sistema de Visualización de Vulnerabilidades

[Inicio](#) [Mapa](#)

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Vulnerabilidad frente al cambio climático



ESTRATEGIA PROVINCIAL DE CAMBIO CLIMÁTICO FASE I: DIAGNÓSTICO

El Proyecto tiene como objetivo desarrollar un sistema de información de vulnerabilidad climática sectorial de la provincia del Guayas dirigido para autoridades, actores institucionales y comunitarios, que contribuya en el proceso de toma de decisiones para la adaptación y mitigación al cambio climático, con el fin de contribuir en el fortalecimiento de la capacidad adaptativa de la provincia del Guayas para enfrentar los efectos de la variabilidad y cambio climático.

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<http://ac.ciifen-int.org/prefectura/>



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Rutas Turísticas en Guayas
Himno de la Provincia del Guayas
Centro Integral de Equinoterapia
Centro Tecnológico Popular

Ley de Transparencia
Ley de Comunicación
Concurso de Méritos - Contacto

Buscar Noticias



Ya está disponible la
Guía Turística Oficial de
la provincia del Guayas

[Descárgala Aquí!](#)



Primera estrategia en la región para enfrentar el Cambio Climático



17 Miércoles, 18 de Diciembre de 2013 10:28

Like Share 26 +1 0 Twitter 6 in Share



El Biólogo José Torres con su charla ante los asistentes del evento ambiental de la Prefectura del Guayas

La Prefectura del Guayas presentará la primera estrategia provincial para enfrentar el cambio climático alineada propuesta por el Ministerio de Ambiente.

Convocatoria

Actividad: Entrega de carta de aprobación de parte de la Ministra de Ambiente al Prefecto
Día: Jueves 19 de diciembre de 2013
Hora: 09h45
Lugar: Edificio del Gobierno Provincial (Illingw piso).

El evento será presidido por el prefecto de Jairala y la ministra de ambiente, Abg. I responderán cualquier inquietud sobre el tem:



Rutas Turísticas en Guayas
Himno de la Provincia del Guayas
Centro Integral de Equinoterapia
Centro Tecnológico Popular

Ley de Transparencia
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Buscar Noticias



Ministerio del Ambiente aprobó la estrategia de la Prefectura del Guayas para enfrentar el Cambio Climático en la provincia

17 Jueves, 19 de Diciembre de 2013 13:48

Like Share 9 +1 0 Twitter 2 in Share



La ministra del Ambiente, Lorena Tapia, calificó con un verdadero hito que Guayas tenga su propia iniciativa para combatir el Cambio Climático.

La provincia del Guayas es la primera provincia que tiene una propuesta ambiental de este tipo en el país. La ministra Lorena Tapia entregó al prefecto Jimmy Jairala la carta con la aprobación de esta iniciativa de protección al medio ambiente.

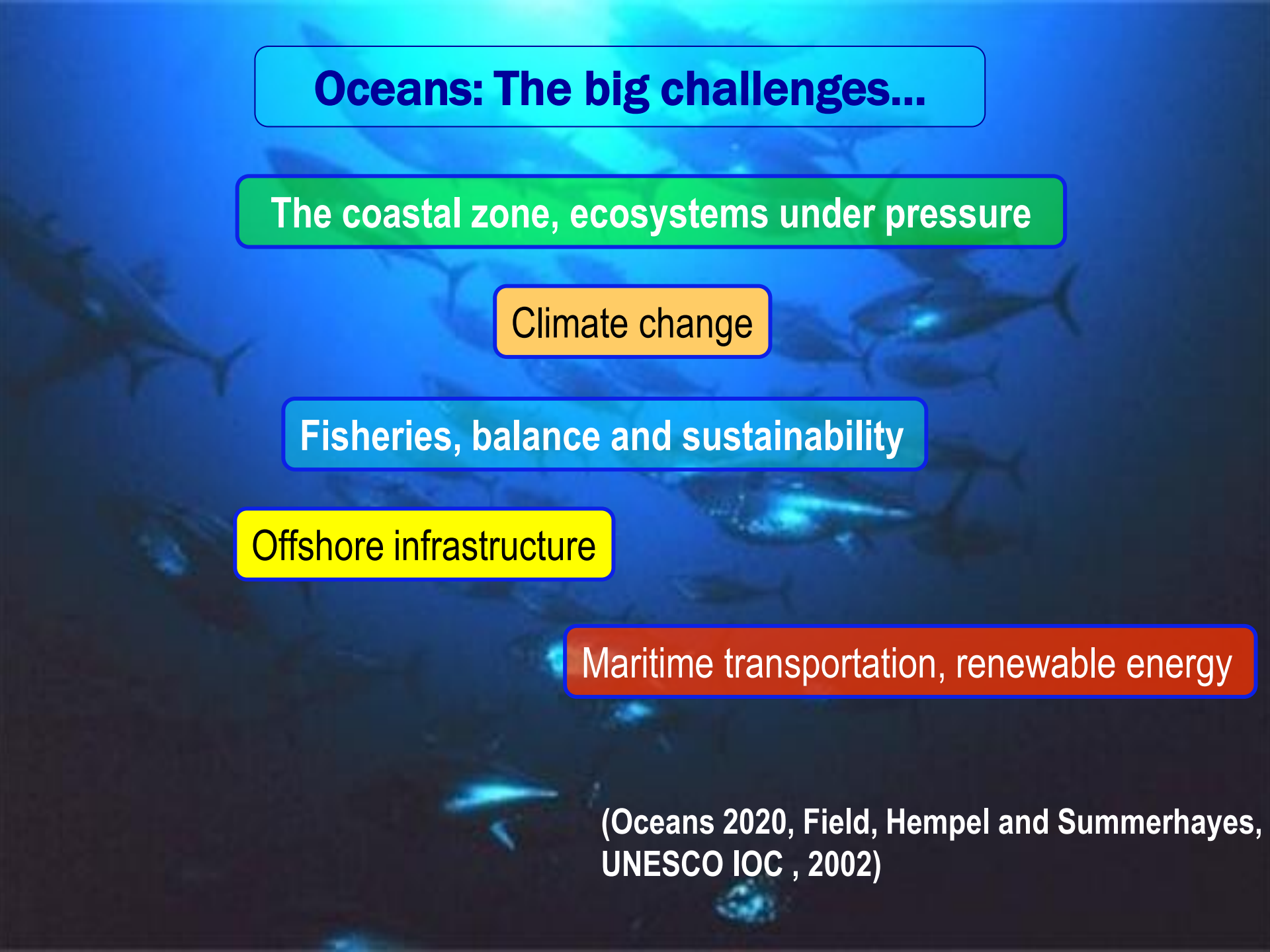
Guayas es la primera provincia del país en tener su propia estrategia para enfrentar el Cambio Climático a nivel regional. Esto tras recibir la aprobación de su iniciativa ambiental de parte del Ministerio del Ambiente, la cual se ajusta a la estrategia nacional diseñada e impulsada por esta Cartera de Estado y el Plan del Buen Vivir.

El acto se desarrolló en el auditorio del Gobierno Provincial y fue presidido por el prefecto Jimmy Jairala. Estuvo presente la ministra de Ambiente, Lorena Tapia; Eduardo Noboa, subsecretario de Cambio Climático; Roberto Urquiza, director de Medio Ambiente de la Corporación Provincial, entre otros invitados.

La propuesta ambiental del Guayas fue presentada por Urquiza. Él, mediante diapositivas, explicó los detalles de su elaboración, que se inició con un estudio de vulnerabilidad de la provincia.

Oceans: the big challenges





Oceans: The big challenges...

The coastal zone, ecosystems under pressure

Climate change

Fisheries, balance and sustainability

Offshore infrastructure

Maritime transportation, renewable energy

(Oceans 2020, Field, Hempel and Summerhayes,
UNESCO IOC , 2002)



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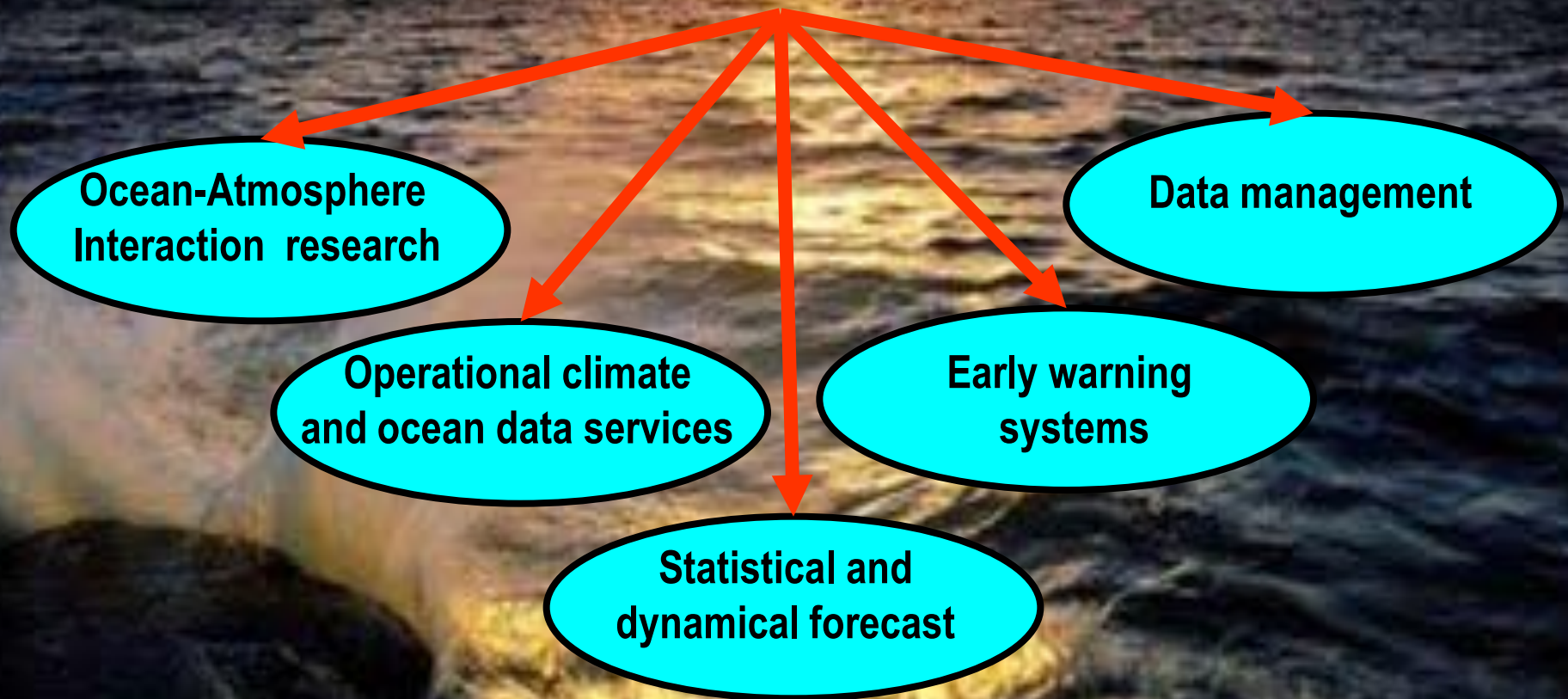
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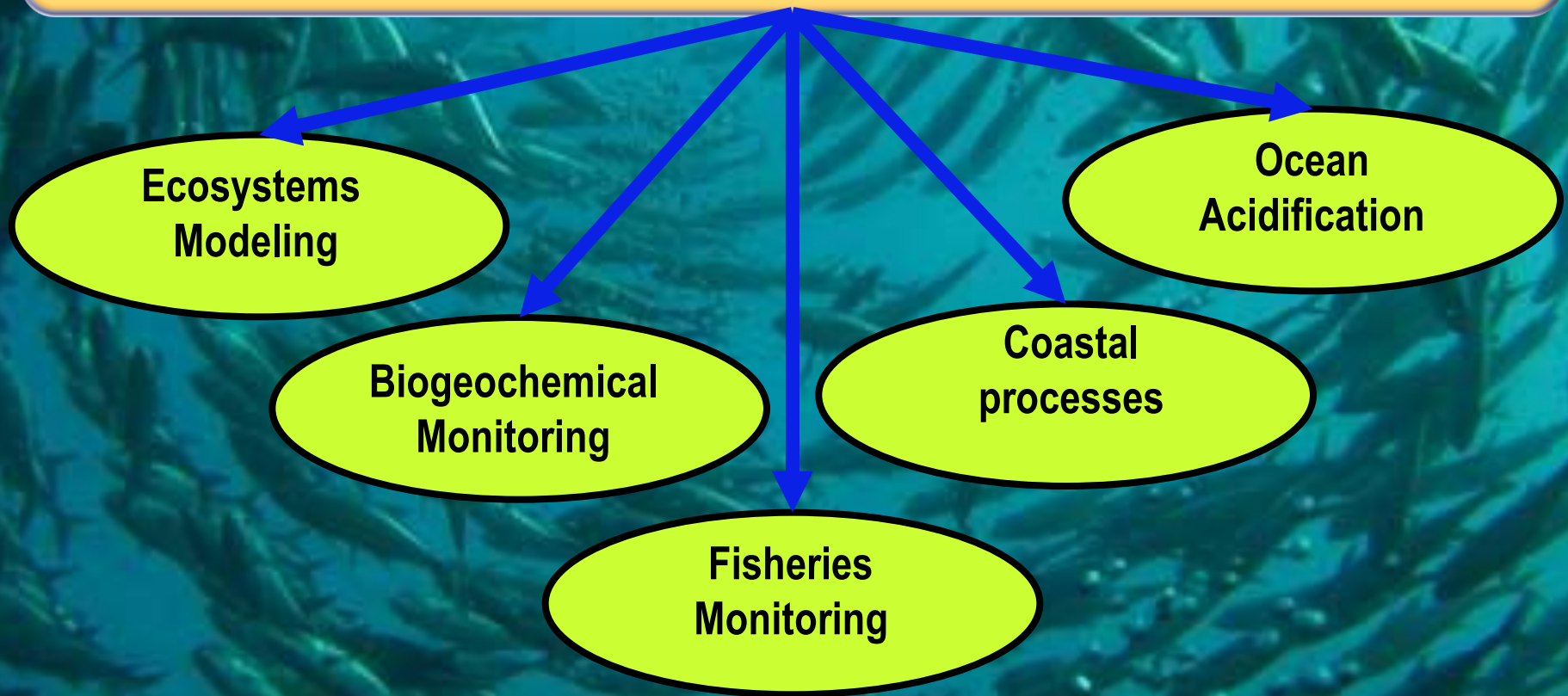
Research and Operational efforts to meet the challenges.



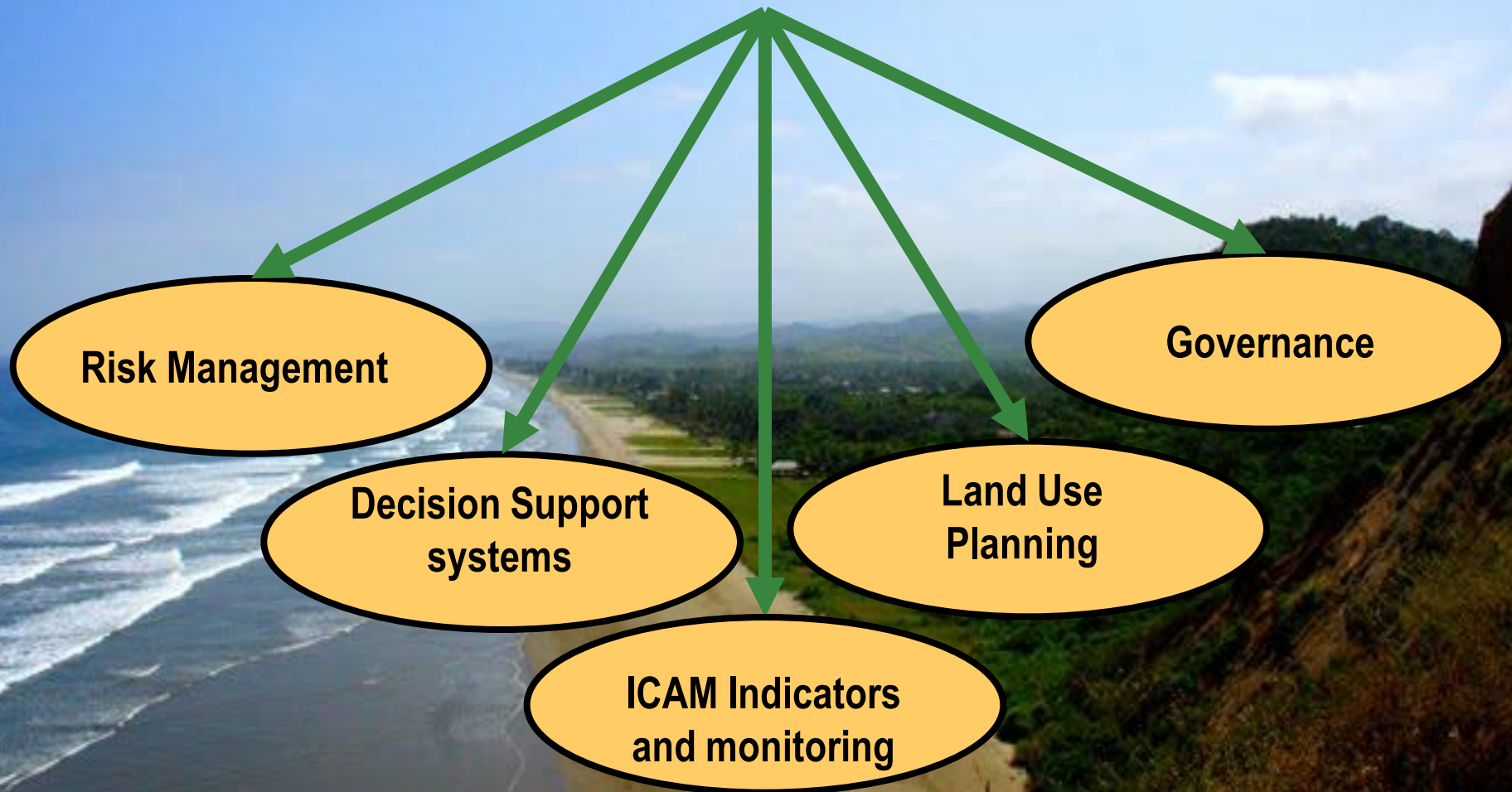
1) To contribute on reduction of social and economical adverse climate related impacts in the coastal zone



2) To improve the understanding of the marine and coastal ecosystems dynamics



3) To contribute to integrated coastal areas management (ICAM)



Some operational challenges to provide ocean-climate services in LACC

**El Niño / La Niña
Local impacts**

Extreme events

Sea Level rise

Coastal erosion

Marine pollution

**Marine Ecosystems
Degradation and change**

- Sustainability of TAO-TRITON (TPOS 2020)

- Ocean forecast and extreme events prediction
e.g hurricanes, storm surges..**
- Data management issues: quality control,
access, integration.**
- Marine Indices definition.**
- Regional and local EWS**

-Integration of observing systems (GOOS-GCOS)

- Integration with satellite data.**
- Ecosystems and coastal processes modeling**

Potential **sinergy** of international initiatives.

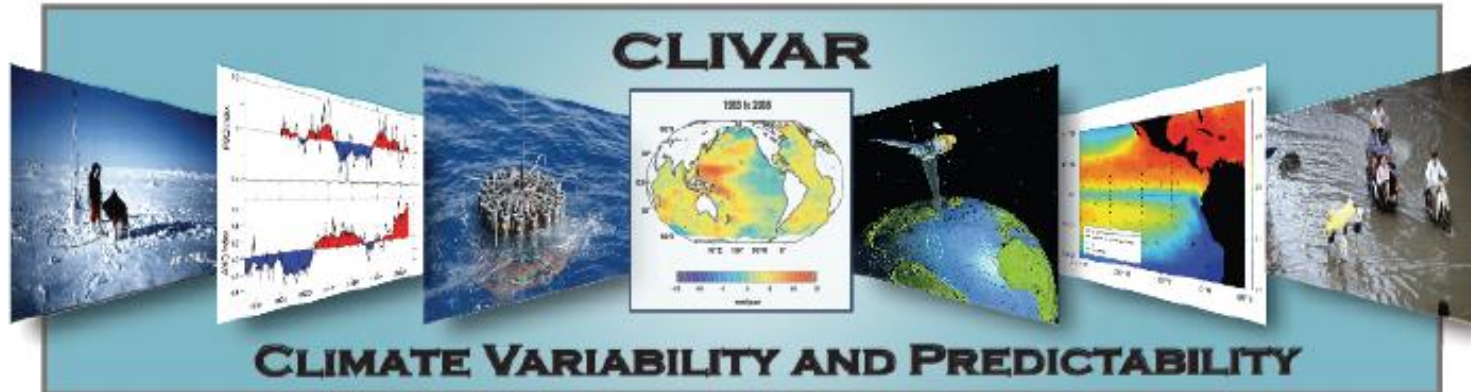


WCRP Grand Challenges

- **Regional Climate** Information
- Regional **Sea-Level Rise**
- **Cryosphere** in a Changing Climate
- Clouds, **Circulation**, and Climate Sensitivity
- Changes in **Water Availability**
- Prediction and Attribution of **Extreme Events**

CLIVAR Mission

The World Climate Research Programme's project on ocean-atmosphere interactions



*To improve understanding and prediction
of ocean-atmosphere interactions
and their influence on climate variability and change,
to the benefit of society and the environment.*



Current CLIVAR Research

- Anthropogenic Climate Change

- Natural variability versus forced change
- Climate sensitivity and feedbacks
- Regional phenomena (e.g., ENSO, AMOC, ...)
- Extremes
- CMIP#
- Climate Engineering (Geo-engineering)



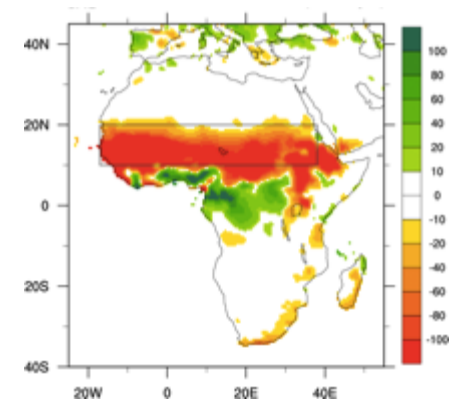
- Intra-to-Seasonal Variability, Predictability and Prediction

- Monsoons (and ENSO, TAV, ...)
- ISV/MJO
- Quantifying prediction uncertainty
- Building pan-WCRP and WWRP links
- CHFP



- Decadal Variability, Predictability and Prediction

- Determine predictability
- Mechanisms of variability (AMO, PDV, ...)
- Role of oceans
- Adequacy of observing system
- Coupled Initialization
- Quantifying prediction uncertainty
- Building pan-WCRP links



A modern glass skyscraper with a blue flag on top, serving as a background for the title. The building is curved and has a grid-like structure of windows. The sky is blue with some clouds. There are green trees in the foreground.

The Global Framework for Climate Services

GFCS goal:

To enable better management of the risks of climate variability and change and adaptation to climate change at all levels, through development and incorporation of science-based climate information and prediction into planning, policy and practice.



World
Meteorological
Organization

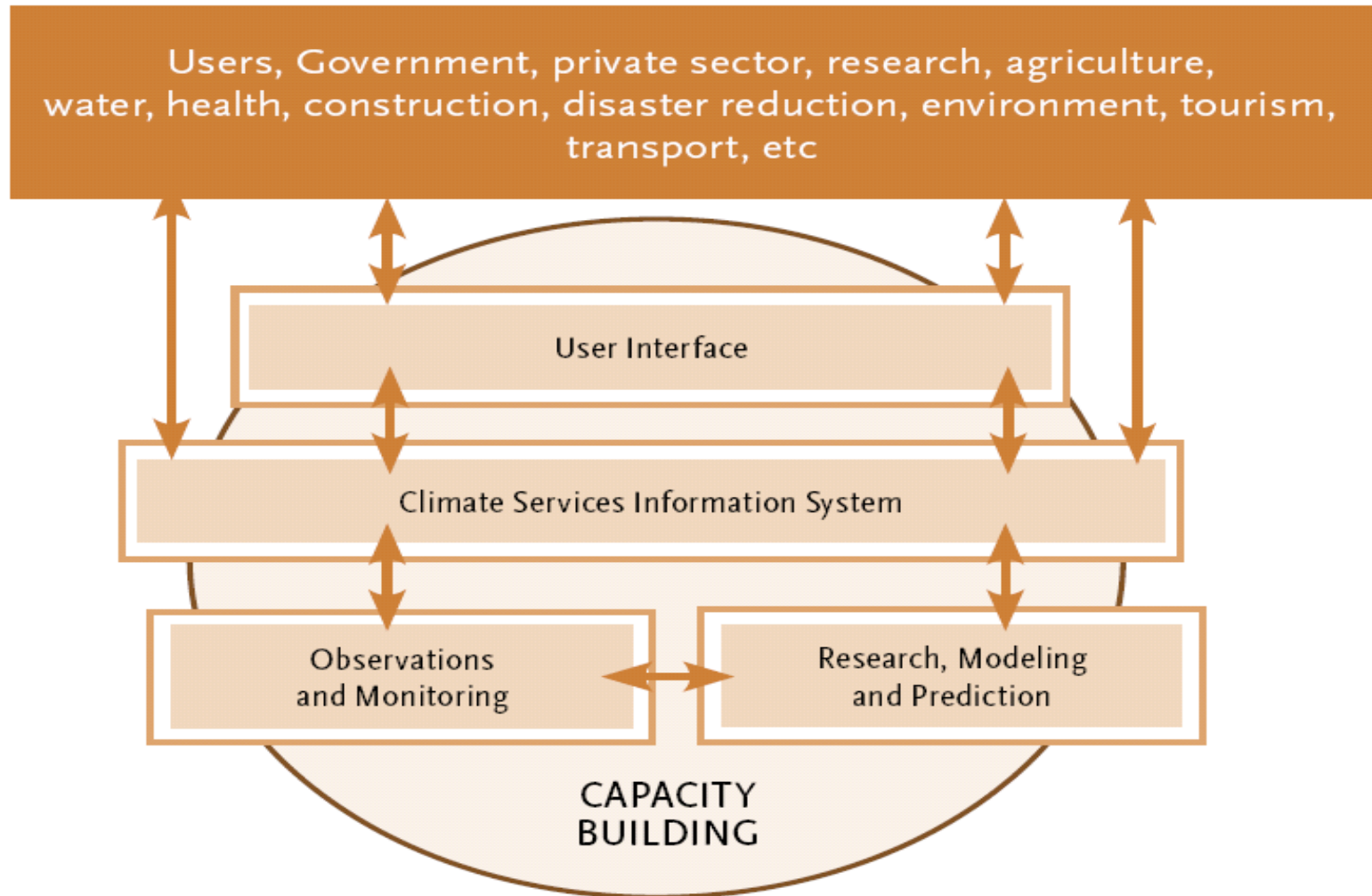
Weather • Climate • Water

WORLD CLIMATE CONFERENCE - 3

Geneva, Switzerland

31 August–4 September 2009

GFCS Overview



Strengthening international science for the benefit of society

futureearth
research for global sustainability

Home

News

Events

About

Resources



Future Earth

Future Earth is a new 10-year international research initiative that will develop the knowledge for responding effectively to the risks and opportunities of global environmental change and for supporting transformation towards global sustainability in the coming decades. Future Earth will mobilize thousands of scientists while strengthening partnerships with policy-makers and other stakeholders to provide sustainability options and solutions in the wake of Rio+20.



Future Earth Blog launched

Future Earth has launched a new online presence at <http://www.futureearth.info>. Intended to be a home for innovative new ideas and essential reading for everyone engaged in global sustainability, this online magazine will be a showcase and discussion forum for the latest ideas and developments in research in this area, both in the projects that form part of Future Earth's network and beyond.

Future Earth will be a global platform to deliver:

- **Solution-orientated** research for sustainability, linking environmental change and development challenges to satisfy human needs for food, water, energy, health;
- **Effective interdisciplinary collaboration** across natural and social sciences, humanities, economics, and technology development, to find the best scientific solutions to multi-faceted problems;
- **Timely information for policy-makers** by generating the knowledge that will support existing and new global and regional integrated assessments;
- **Participation** of policy-makers, funders, academics, business and industry, and other sectors of civil society in co-designing and co-

Proposed actions to foster synergy

- To agree the necessary arrangements to establish a **Regional CLIVAR Panel, working group or task force for LACC** to define the regional research agenda, taking in account the outcomes of the WCRP-LACC Conference.
- To develop a road map for the inclusion of the **marine component in the GFCS** with focus **on LACC**.
- To request a regional meeting with **GOOS, JCOMM (IOC-WMO)** where the agreed research agenda for LACC be presented and coordinated.
- To request to **Future Earth** and **UNEP-PROVIA**, information about their plans and activities related to coastal and marine issues for LACC.



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Contributions to the **regional climate research** agenda





Some contributions to the regional climate research agenda

- **Inter basins** influence on ENSO impacts.
(Pacific- Atlantic)
- **Decadal modulation** of ENSO local effects.
- Role of the **Eastern Pacific** in ENSO diversity.
- **Convective processes** in the Eastern Pacific and ENSO.
- The **thermocline feedback** in the eastern Pacific
- **Extreme events** prediction



III International Conference on ENSO

Bridging the gaps between Global ENSO Science
and regional processes, extremes and impacts.

Guayaquil, Ecuador 12-14 November 2014



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Muchas gracias !



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