

IORP terms of reference

<http://www.clivar.org/clivar-panels/indian>

- ❖ Provide scientific and technical oversight for a sustained ocean observing system for the Indian Ocean in order to provide ocean observations needed for climate variability research, and to underpin operational ocean applications and services relevant to the region, particularly with regard to ocean-state estimation and climate prediction.
- ❖ Coordinate, and complete the implementation of the sustained ocean observing system for the Indian Ocean, to: (a) meet the common requirement of CLIVAR research foci and WCRP grand challenge, (b) satisfy the common requirements of GOOS and its modules; and (c) coordinate implementation activities in collaboration with relevant regional and global bodies, in particular IOGOOS and JCOMM.
- ❖ Review and promote frontier multi-disciplinary research themes related to CLIVAR research foci and WCRP grand challenges. Liaise with relevant research panels of CLIVAR for coordinating scientific initiatives.
- ❖ Report to the CLIVAR SSG and to GOOS through the IOC Perth Office.

Recommendations/Findings for IORP from High Level panel for IndOOS, 2007

- ❖ Engagement of IO agencies
- ❖ Articulate central role of remote sensing in shaping IndOOS
- ❖ Articulate importance of IndOOS: Socio-economic issues, provision of data and information, assimilation and state estimation products
- ❖ Articulate relevance of IndOOS components to particular phenomena and mechanisms, especially decadal prediction (enough deep observations?)
- ❖ Strengthen links to climate research, climate prediction, extending into biogeochemical and ecological domains
- ❖ Strengthen sharing of data, particularly between IndOOS and coastal projects
- ❖ Emphasise quality control, integration, and assembling of data sets
- ❖ Develop technical working group with IORP oversight: Indian Resources Forum:
To estimate needs and priorities, coordinate resources

IORP current activities

- ❖ **IndOOS decadal review:**

- ❖ Develop strong statements for the continuation of the Indian Ocean observing system in terms of important climate questions and climate variables to be measured.
- ❖ Evaluate the design of the observing system in terms of the identified climate questions and variables and provide **actionable recommendations** for its future evolution.

IOGOOS (2001) vs IRF (2010)

- ❖ IOGOOS: An association of marine operational and research agencies in the Indian Ocean region that provide an organizational framework for planning, coordination and effective implementation of appropriate regional and sub-regional ocean and coastal observing systems and services.
- ❖ IRF: An international group of leaders from the IndOOS stakeholder community, derived from institutions and governments that have the capacity to assign operational resources to IndOOS and / or facilitate resourcing for IndOOS.

IOGOOS terms of reference

<http://www.incois.gov.in/Incois/iogoos/objectives.jsp>

- ❖ Enhance the Ocean Observing System in the region,
- ❖ Promote and facilitate efficient and effective management, exchange and utilisation of oceanographic data,
- ❖ Promote programmes and projects in operational oceanography and ocean services in the region meeting the requirements of end-users,
- ❖ Strengthen capacity building for enhancing the capabilities in the region,
- ❖ Encourage research to support the needs of Users,
- ❖ Develop synergies with other ocean programmes and regional GOOS bodies, and
- ❖ Contribute to international planning and promotion of GOOS.

IRF terms of reference

http://www.incois.gov.in/Incois/iogoos/IRF_I.jsp

- ❖ To facilitate the identification and alignment of institutional resources (eg ocean observing infrastructure, scientific capacity, vessel support) for the implementation program of the IOP (and SIBER) in response to the high priority operational needs as they continue to build IndOOS.

IndOOS Decadal Review

- ❖ Develop strong statements for the continuation of the Indian Ocean observing system in terms of important climate questions and climate variables to be measured.
- ❖ Evaluate the design of the observing system in terms of the identified climate questions and essential ocean variables and provide **actionable recommendations** for its future evolution.

From OOPC and WMO

- ❖ Think broadly and holistically. This is not about individual interests or process experiments. But about large-scale, long-term scientific drivers. Our review should be a document that the whole community can rally around and something that can be used to motivate politicians and funders to support IndOOS.

Break-out Groups

- ❖ 14:00-15:30 - Breakout groups of 6-7 people: Prioritise actionable recommendations using the rubric
 - ❖ Tier-1 (High priority)
 - ❖ Tier-2 (Desirable)
 - ❖ Tier-3 (Lowest priority)
- ❖ 16:00-17:15 - Report back (5 minutes per group) and group discussion

Rubric for Prioritisation

- ❖ Does the actionable recommendation:
 - ❖ provide sustained observations to characterise and advance our understanding of key phenomena?
 - ❖ provide data to evaluate, validate, and initialise climate predictions and forecasting?
 - ❖ support integration of satellite and in situ observations including calibration and validation?
 - ❖ provide observations to track the evolving state of the ocean?

BreakOut Group	First Name	Last Name	Review Role	Affiliation	Country
1	Aneesh	Subramanian	Lead author	Scripps Institute of Oceanography	USA
1	Bernadette	Sloyan	Lead author	CSIRO	Australia
1	Coleen	Moloney	Review Committee	University of Cape Town	South Africa
1	Peter	Dexter	Review Committee	IOC PPO	Australia
1	Jenny	Huggett	Observer	DEA: Oceans and Coasts	South Africa
1	Nagaraja	Kumar Masuluri	Observer	INCOIS/IOGOOS Secretariat	India
1	Sidney	Thurston	Observer	NOAA Global Ocean Observations	USA
2	Annamalai	Hariharasubramanian	Lead author	University of Hawaii	USA
2	Dongxiao	Wang	IORP	South China Sea Institute of Oceanol	China
2	Jerry	Wiggert	Lead author/IORP	University of Southern Mississippi	USA
2	Marjolaine	Krug	Review Committee	CSIRO/OOPC	South Africa
2	Mike	McPhaden	Lead author/IORP	NOAA/PMEL	USA
2	Greg	Cowie	Observer	University of Edinburgh	UK
2	R. Dwi	Susanto	Observer	University of Maryland	USA
3	Caroline	Ummenhofer	Lead author/IORP	WHOI	USA
3	Peter	Strutton	Lead author	University of Tasmania	Australia
3	Susan	Wijffels	Review Committee	CSIRO/CLIVAR	Australia
3	Unnikrishan	Alakkat	Lead author	National Institute of Oceanography	India
3	Yukio	Masumoto	Lead author	University of Tokyo	Japan
3	Kentaro	Ando	Observer	JAMSTEC	Japan
3	Riaan	Cedras	Observer	University of the Western Cape	South Africa
4	Jay	McCreary	Review Committee	University of Hawaii/CLIVAR	USA
4	Ming	Feng	Lead author/IORP	CSIRO	Australia
4	Raleigh	Hood	Lead author	University of Maryland, Cambridge	USA
4	Tomoki	Tozuka	Leader author/IORP	University of Tokyo	Japan
4	Francis	Marsac	Observer	Institute of Research for Developmer	France
4	Michael	Landry	Observer	Scripps Institution of Oceanography	USA
4	Satya	Prakash	Observer	INCOIS Hyderabad	India
5	Lin	Liu	IORP	First Institute of Oceanography	China
5	Toshiaki	Shinoda	Leader author/IORP	Texas A&M University	USA
5	Joaquim	Goes	Observer	Columbia University	USA
5	Richard	Matear	Review Committee	CSIRO/IOGOOS	Australia
5	Birgit	Gaye	Observer	University of Hamburg	Germany
5	Mike	Roberts	Observer	Mandela University	South Africa
5	Shoichiro	Kido	Observer	Univestity of Tokyo	Japan
	Jerome	Vialard	Lead author/IORP	LOCEAN	France
	Lisa	Beal	Lead author/IORP	University of Miami	USA
	Roxy	Mathew Koll	Lead author/IORP	IITM	India
	Jing	Li	ICPO	International CLIVAR Project Office (China