



TPOS 2020

Monthly Status Report

June 2015

Monthly Status Report (MSR)

Release Date:

July 7, 2015

Summary:

This month the project was characterized by many moving parts. The Backbone, Biogeochemistry, and Planetary Boundary Layer Task Teams conducted videoconference sessions. They have begun organizing and drafting strawman documents focused on the redesign of TPOS. In the short-term these documents will be used to create Project-wide agreement on the baseline needs, as well as the short- and long-term vision for the observing system. Ultimately they will evolve to guide the project's scope, schedule, and required resources.

Opportunity for Involvement:

- The Climate Observation and Monitoring Division of NOAA's Climate Program Office released a Federal Funding Opportunity on 2 July 2015 for "In Situ Technologies to Contribute to the Tropical Pacific Observing System (TPOS 2020) Project."
- Letter Of Intent Deadline: 30 July 2015
- Proposal Deadline: 23 September 2015
- For more information please visit:
<http://cpo.noaa.gov/GrantsandProjects/ClimateProgramOfficeFFO.aspx>
- For more information see in this Report: Cross-Project Dependencies and Opportunities

Highlights:

Steering Committee:

- TPOS 2020 had a presence at the NOAA Climate Observation Division, 9th COD Community Workshop
- TPOS 2020 had a presence at the Intergovernmental Oceanographic Commission (IOC) 28th Session of the General Assembly

Backbone Task Team:

- The second videoconference was conducted on 23 June. For more information see in this Report: Backbone Task Team

Planetary Boundary Layer Task Team:

- Second videoconference was conducted on 4 June. For more information see in this Report: Planetary Boundary Layer Task Team

Biogeochemistry Task Team:

- Second videoconference was conducted on 24 June. For more information see in this Report: Biogeochemistry Task Team

2014 Workshop:

- A revised version of the white paper on the evaluation of TPOS from the ocean data assimilation perspective, written for the TPOS2020 workshop held in Scripps Institute of Oceanography was accepted for publication in QJRM: <http://onlinelibrary.wiley.com/doi/10.1002/qj.2579/abstract>

The Monthly Status Reports can be found at: www.tpos2020.org/monthly-status-report

Additional Information:

Please visit the website at: www.tpos2020.org
Send comments and questions to: info@tpos2020.org
Follow us on Twitter: [@TPOS2020](https://twitter.com/TPOS2020)

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The TPOS 2020 Project will evaluate, and where necessary advocate change in all elements that contribute to the Tropical Pacific Observing System (TPOS), based on a current understanding and technical capability. The project aims for enhanced effectiveness for all TPOS stakeholders, and informed by the development and on-going requirements of the operational prediction models that are primary users of TPOS data. TPOS 2020 embraces the integration of diverse sampling technologies, with a deliberate focus on robustness and sustainability, and will deliver a legacy of improved governance, coordination and supporting arrangements.

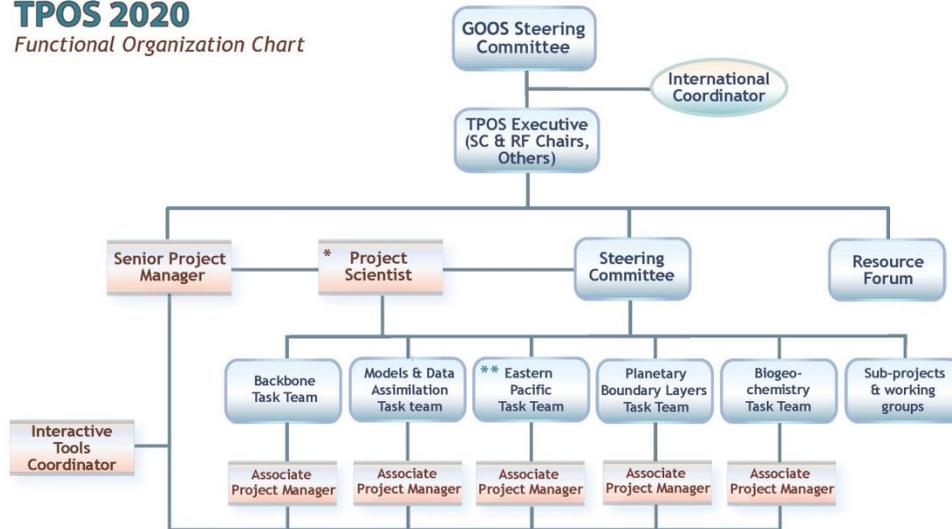
The Project will work within the Framework for Ocean Observing developed by the Global Ocean Observing System (GOOS) and use GOOS as a reporting mechanism to other relevant intergovernmental coordination mechanisms. A sustainable TPOS will be the principle outcome and legacy for GOOS. As such, TPOS 2020 will operate primarily as an independent Project and work through its sponsors to ensure all dependencies and links are appropriately managed. Four primary elements are included in the governance of the Project:

- A TPOS 2020 Steering Committee responsible for oversight, coordination, and guidance to the Task Teams, Sub-projects and Working Groups.
- A Resources Forum drawn from sponsors and responsible for coordinating resources.
- An Executive populated from the leadership of the above and responsible for reporting.
- A Distributed Project Office focused on coordination activities, supported and resourced by the sponsors.

It is through its partnerships and governance structure that TPOS 2020 will design a modern, sustained tropical Pacific observing system that meets both science and societal needs.

The project prospectus can be located online at: www.tpos2020.org/prospectus

TPOS 2020
Functional Organization Chart



* This role is currently being explored and developed
 ** This Task Team and its role are still under consideration

KEY ACCOMPLISHMENTS AND NEAR-TERM PROJECT MILESTONES

Steering Committee

- Co-Chairs: Dr. Neville Smith, Retired / Dr. William “Billy” Kessler, NOAA PMEL

Current Month Activities:

- Billy Kessler (presented) on TPOS 2020, Dean Roemmich, Arun Kumar, Meghan Cronin (attended) the NOAA Climate Observation Division, 9th COD Community Workshop, NOAA Center for Weather and Climate Prediction, College Park, MD, 15-17 June
- Weidong Yu presented on TPOS 2020 at the IOC Assembly, JCOMM side event in Paris during 18-25 June
- Draft agenda for SC-2 under initial consideration

Upcoming Activities:

- Billy Kessler to present TPOS 2020 at the CLIVAR ENSO workshop in Paris on 10 July
- Ongoing planning for the SC-2 meeting in Hobart Australia on 14-17 October
- Consult on, and approve TPOS 2020 Engagement Plan
- Finalize the Modelling and Data Assimilation TT to address questions and concerns and formalize chairmanship and scope and strategy
- Work with Sub-groups and Working groups to establish leadership and scope (eg Eastern Pacific TT; proposed upwelling project)
- Work with TRF leadership, SC and TRF members to articulate a strategy and initial plans for engagement

Last Month's Activities:

- Billy Kessler briefed NOAA NCEP, CPC leadership via teleconference
- A TPOS 2020 Overview document was prepared for the GOOS SC-4 meeting on May 24-26, 2015
- Billy Kessler briefed the GOOS SC via videoconference on May 22, providing a science overview, project office status, and the importance of resource forum engagement
- Bilateral sessions are being coordinated among Resource Forum members to be conducted during the IOC Assembly Sessions in Paris conducted during June 18-25, 2015

Published/Posted Materials:

- June 2015: The Mercator-Ocean Scientific Newsletter: “TPOS2020: TROPICAL PACIFIC OBSERVING SYSTEM FOR 2020” By S. Cravatte, A. Ganachaud, B. Dewitte, F. Hernandez, Newsletter #52 (<http://goo.gl/rKbv6>)
- Mar. 2015: Published article in WMO Bulletin: “Progress in Observing and Predicting ENSO”, (Vol 64 (1) – 2015)
- Feb. 2015: US CLIVAR Variations: “ENSO observing system: Past, present, and future”
- Dec. 2014: TPOS 2020 Project Prospectus
- Dec. 2014 TPOS 2020 SC-1 Report
- Mar. 2014: Terms of Reference for TTs

Project Function:

The SC will provide scientific and technical oversight for the planning, system design, and implementation of the TPOS. This group will assess the evolving set of requirements through dialogue with relevant users and stakeholders, and coordinate a set of (pilot) projects designed to test and evaluate options. The SC will assess potential technology options for delivering a more effective and efficient TPOS including relevant scientific/expert panels and bodies. Together with the Resources Forum, the SC will manage communication and reporting.

Point of Contact:

Sr. Project Manager, Andrea McCurdy-> amccurdy@oceanleadership.org

Resources Forum

- Chair: Craig McLean, NOAA Oceanic and Atmospheric Research

Current Month Activities:

- Interim TRF Chair, Craig McLean met with JAMSTEC Executive Director, Dr. Yoshihisa Shirayama while in Washington, D.C. for the Japan Society for the Promotion of Science Forum on 12 June
- Interim TRF Chair, Craig McLean met with SOA's Director for International Affairs Dr. Haiwen Zhang and Dr. Weidong Yu while in Paris for the IOC General Assembly

Upcoming Activities:

- Responses to Call to Action letter responses reviewed and formal TRF Membership confirmed
- 2015 Milestones and opportunities for meetings reviewed by members

Last Month's Activities:

- A letter of thanks and acknowledgment was sent from Interim Chair Craig McLean to participants of the initial Resource Forum teleconference held in October, 2014
- A second letter was also sent from Interim Chair Craig McLean requesting the following information be provided by mid-June:
 - A formal nomination of a Resource Forum member
 - A formal point of contact
 - A list of possible meeting venues; allowing for more formal conversations among Resource Forum members
 - A nomination, or self-nomination of a co-Chair to serve with Craig
- TRF-1 Report Released version was prepared

Published/Posted Materials:

- June 2015: TRF-1 Report (available on the TPOS 2020 website)
- Mar. 2014: Terms of Reference (available on the TPOS 2020 website)

Project Function:

The TPOS 2020 TRF will facilitate and coordinate the provision of resources by member institutions required to advance TPOS 2020 activities based on recommendations from, and in consultation with, the TPOS SC. It will promote and encourage contributions from institutions, Official Development Assistance agencies, participating and non-participating countries, and expand membership of the TRF as necessary; including the exploration of bilateral and multi-lateral partnerships. The TRF will coordinate resources that may be applied to the TPOS, including necessary observing research, technology development/testing, modelling, scientific analysis, infrastructure (e.g., ship resources and/or deployment of observing assets), along with Project Management and travel support.

Point of Contact:

Sr. Project Manager, Andrea McCurdy-> amccurdy@oceanleadership.org

Executive

This Month's Activities:

- No reported outcomes this month

Upcoming Activities:

- Formal responsibilities and ToR to be drafted in summer 2015

Published/Posted Materials:

- There are no published materials at this time.

Project Function:

Under development by the SC Co-chairs and TRF Chair

Point of Contact:

Sr. Project Manager, Andrea McCurdy-> amccurdy@oceanleadership.org

Backbone Task Team

- Co-Chairs: Susan Wijffels, CSIRO / Sophie Cravatte (SC Member), Centre IRD de Noumea

This Month's Activities:

- The second teleconference was conducted on June 23
 - Five strawman design slide sets were presented and requirements were reviewed
 - The TT will form two different subgroups to further develop strawmen based on the agreed to commonalities and difference presented in the initial 5 presentations
 - Co-Chairs from both the BGC and PBL TTs were in attendance
- An in person session is being planned on 16-18 September in Noumea, New Caledonia
- Susan Wijffels is invited to present a TPOS 2020 and Backbone TT summary at the OceanView GODAE workshop in Sydney in November

Upcoming Activities:

- Ensure proper linkages with both the PBL and PGC TTs by tracking Actions
- Susan Wijffels, Sophie Cravatte and Billy Kessler to write a proposal for the Office of Climate in NOAA to ask support and expertise for data synthesis for TPOS
- Ken Ando to contact Dr. Fuji to see if he would be interested to participate in the activities for the data synthesis project.

Last Month's Activities:

- The inaugural video conference was conducted via WebEx among TT members and co-Chairs from other Task Teams
- Co-Chairs are creating near and mid-term meeting schedules, the next WebEx session is scheduled for June 23
- A second teleconference is planned for June and an in-person meeting is planned for September 16-18, 2015 in Noumea, New Caledonia
- Based on information provided by Arun Kumar a draft image has been created demonstrating the status of operational systems.
- Based on an estimated costing table of the various observations of TPOS the TT is creating strawman designs (from delivery to data)

Published/Posted Materials:

- Dec. 2014: Terms of Reference (available on the TPOS 2020 website, see: Groups and Outcomes)

Project Function:

Through an integrated approach the Backbone TPOS will achieve its objectives through a combination of in situ and remote sensing approaches, augmented as appropriate with advice from models and data assimilation. Sampling for the Backbone has as its goal to:

- (a) Observe and quantify the state of the ocean, on time scales from weekly to interannual/decadal;
- (b) Provide data in support of, and to validate and improve, forecasting systems;
- (c) Support calibration and validation of satellite measurements;

- (d) Advance understanding of the climate system in the tropical Pacific, including through the provision of observing system infrastructure for process studies; and
- (e) Maintenance and, as appropriate, extension of the tropical Pacific climate record.

Point of Contact:

Associate Project Manager, Ana Lara-Lopez-> Ana.Lara@utas.edu.au

Planetary Boundary Layers Task Team

- Co-Chairs: Meghan Cronin, NOAA PMEL / Tom Farrar (SC Member), WHOI

This Month's Activities:

- Second videoconference was conducted on 4 June
- The group determined that to be more productive they may split into two smaller teams
- Current activities are focused on a set of near-term (term of the project) and sustained activities:
 - The near-term work plan is have several recommendations for studies that should be done to determine the sustained observations (long term needs) and process studies (shorter term needs).
 - The TT may also make recommendations to research areas for future Climate Process Teams.
 - Related to sustained observations, the TT will examine the value of both regularly gridded sites, such as what already exists in TAO/TRITON vs a more 'regime' oriented approach where placement is guided more by the processes being observed.
- The strawmen ideas should be fleshed out by August 1, with more formal recommendations (in the form of a white paper) due prior to SC-2

Upcoming Activities:

- Second WebEx session is planned for late July or early August
- Determine an optimal method for tracking and logging smaller group dialog
- Determine need for an in-person meeting this year, potentially prior to the SC-2 session in Hobart

Last Month's Activities:

- Inaugural video conference conducted on May 18, well attended and productive
- Creating strawman overview documents on three separate topics:
 - Sustained TPOS PBL observations
 - Process studies
 - Climate Process Teams
- Consulted with SC member Bill Large on optimal modeler/modelling community involvement

Published/Posted Materials:

- Dec. 2014: Terms of Reference (available on the TPOS 2020 website, see: Groups and Outcomes)

Project Function:

The observational needs regarding improved monitoring and modelling of ocean surface and near-surface processes are likely to have two components: sustained detailed observations and process studies. It is the role of this Task Team to identify which requirements are best met via a sustained observing effort (> 5 years-11), and which can be addressed with specific short-term process campaigns.

Point of Contact:

Deputy Project Manager, Lucia Upchurch-> lucia.upchurch@noaa.gov

Modelling and Data Assimilation Task Team Discussion

This Month's Activities:

- Explore data assimilation issues that should be addressed during the SC-2 session
- Ongoing exploration of how to best meet the needs of the modelling community, several ideas have been generated and solutions being discussed and follow-up activities underway

Upcoming Activities:

- Explore the feasibility of identifying a rapporteur in key modelling groups that can report back to TPOS 2020 on their activities and possible linkages. These may or may not be TT members.
- Explore how TPOS 2020 might benefit from the recently announced ONR model improvement project Eol. As well as identify potential collaborations among TPOS 2020 members interested in participating. (Note: Dake suggested there are groups within China that may be interested in responding.)
- SC Members to generate short summaries of what they perceive as TPOS M&DA needs, and how we might go about meeting those needs.

Last Month's Activities:

- Ongoing exploration of how to best meet the needs of the modelling community, several ideas have been generated and solutions being discussed and follow-up activities underway

Published/Posted Materials:

- Dec. 2014: Terms of Reference (available on the TPOS 2020 website, see: Groups and Outcomes)

Purpose in Project:

A significant fraction of the observational effort will need to be directed towards improved understanding of processes and mechanisms, which in turn should be coordinated with a program of improved model parameterisations and reduced systematic error; an additional benefit is that such data/model studies also contribute to improved design and reduced inefficiencies of the observing system.

Point of Contact:

Associate Project Manager, Hannah Dean-> hdean@oceanleadership.org

Biogeochemistry Task Team

- Co-Chairs: Adrienne Sutton, NOAA PMEL / Pete Strutton (SC Member), Univ. of Tasmania

This Month's Activities:

- The inaugural videoconference was held on 24 June
- The first BGC TT telecom was held successfully and members discussed:
 - What are the major science questions and objectives?
 - What are the most important time and space scales, or phenomena, that we need to quantify?
 - How far do we go beyond biogeochemistry to biology, ecology, fisheries?
 - Should it include trace metals and design infrastructure with them in mind for the future?
 - What are the core variables by platform?
 - Is there support the development of a proposal for a BGC Saildrone?

Upcoming Activities:

- A second videoconference is planned at the end of July, dates to be confirmed.
- Prepare a proposal for testing of a BGC saildrone in the tropical Pacific

Last Month's Activities:

- Membership has been confirmed with the exception of a few remaining slots
- Discussions are underway for a technology development proposal and study

Published/Posted Materials:

- Dec. 2014: Terms of Reference (available on the TPOS 2020 website, see: Groups and Outcomes)

Project Function:

The role of the Biogeochemistry Task Team (BGCTT) is to evaluate and recommend the most promising focii, and to provide advice on possible solutions. The Biogeochemistry Task Team will begin with carbon biogeochemistry as its core scientific concern. Here will be the consideration of the term biogeochemistry to include primary productivity (noting that the Backbone Observing System likely includes ocean color satellites) but not higher trophic levels (zooplankton to fish).

Point of Contact:

Associate Project Manager, Ana Lara-Lopez-> Ana.Lara@utas.edu.au

Eastern Boundary Task Team

This Month's Activities:

- Consultative Draft ToR were circulated to the SC for comment and approval
- Scope and membership conversations are ongoing

Upcoming Activities:

- Lead(s) and members formally announced
- High-level schedule agreed to

Last Month's Activities:

- Terms of Reference have been drafted and under ongoing review with SC co-Chairs and proposed project lead
- Established preliminary list of approximately 12 members

Published/Posted Materials:

- No publications to date

Project Function:

Task Team to focus on the eastern Tropical Pacific boundary region; giving priority to engaging regional experts and institutions. In addition to defining needed observations, goals of the TT could include: (a) Capacity building for improved sustained observing capability; and (b) Facilitation of the development of a regional research project, which may contribute guidance toward a sustained observing system.

Point of Contact:

Associate Project Manager, TBD-> info@tpos2020.org

Sub-projects and Working Groups

Western Boundary

This Month's Activities:

- Scope, membership, and ToR conversations are ongoing

Upcoming Activities:

- Lead announced
- Draft of regional activities and proposed scope of activities
- Identify opportunities for ship and resource sharing given all of the activities being conducted in this region
- Next steps determined

Last Month's Activities:

- SC member, Ken Ando sent a summary of the activities of the western Pacific

Published/Posted Materials:

- No publications to date

Project Function:

This group will take advice on a project to be conducted in the Western Pacific. Once underway they will advise on mechanism for the project's development and oversight.

Point of Contact:

TBD-> info@tpos2020.org

Time Series/Climate Record

This Month's Activities:

- The Backbone TT continues to explore the adoption of this activity

Upcoming Activities:

- Confirm Backbone TT relationship to this activity

Last Month's Activities:

- The Backbone TT is exploring the adoption of this activity

Published/Posted Materials:

- Nov. 2014: Terms of Reference (available on the TPOS 2020 website, see: Groups and Outcomes)

Project Function:

This small group consisting SC member and non-member experts will determine criteria for evaluating fixed-point time series, to elaborate on the purpose and utility of time series within TPOS and to identify the highest ranking sites and perhaps any further locations that should be investigated.

Point of Contact:

TBD-> info@tpos2020.org

Distributed Project Office

This Month's Activities:

- Password projected Intranet established and released to the Project membership
- Consultative Draft of the Engagement Plan under review
- Ongoing planning and coordination of SC-2 related activities

Upcoming Activities:

- Approval of Engagement Plan
- Draft Engagement Action Plan
- Support TRF activities as required and formalize membership, points of contact, and milestones
- Release project Slide Set

Last Month's Activities:

- Created the Released version of the TRF-1 Report
- Distributed Craig McLean's letter of thanks to TRF-1 participants
- Distributed Craig McLean's letter of engagement to TRF-1 participants (information to needed to facilitate future engagement has been requested)
- Conducted an initial visit to the IMOS facility in Hobart, Australian and met Associate Project Manager, Ana Lara-Lopez and support staff member Donna Seward, and CSIRA staff member Leonie Wyld
- Launched planning for SC-2 meeting in October
- Redrafted outline of the TPOS 2020 Engagement Plan

Published/Posted Materials:

- Released: Project Management Plan V1
- Consultative Draft: Project Execution Plan V1

Project Function:

The DPO will develop communications, and coordination tools that will facilitate integrated decision making, and provide access to relevant deployment and observing asset decision making tools. The DPO will support the suite of tools and activities required to track the commitments to all aspects of TPOS 2020 and to facilitate integrated decision making across networks, groups, agencies, and nations; during the project and throughout the lifecycle of the observing system beyond TPOS 2020.

CROSS-PROJECT DEPENDENCIES AND OPPORTUNITIES

NEW: The Climate Observation and Monitoring Division of NOAA's Climate Program Office released a Federal Funding Opportunity on 2 July 2015 for "*In Situ* Technologies to Contribute to the Tropical Pacific Observing System (TPOS 2020) Project."

In this solicitation, COM invites proposals to advance the readiness of *in situ* observing platforms (e.g. floats, gliders, moorings) and assess their potential to address observational requirements and gaps in the tropical Pacific Ocean region. These advancements will contribute to the Tropical Pacific Observing System (TPOS 2020) Project (<http://tpos2020.org/>). Technology proposed should be at a Technology Readiness Level between 4 and 8 (http://www.sab.noaa.gov/Reports/RRT_Report-080604.pdf; Appendix V.A).

- LOI Deadline: 30 July 2015
- Proposal Deadline: 23 September 2015
- For more information please visit: <http://cpo.noaa.gov/GrantsandProjects/ClimateProgramOfficeFFO.aspx>

During the SC-Interim call in early April Dongchull Jeon provided an overview of KIOST activities that may be TPOS related. They are summarized below:

- 2016: 6 month ship plan. Crossing Western/Eastern Pacific
- Could bring research vessel to EP. (A CTD Survey across Equator might be basis for future plans)
- Coastal Current monitoring system near Peruvian coast; latter half of 2016, for 4 years, potential to hand to Peruvian agency
- Connection to Equatorial Upwelling in 2016: new research vessel can be committed to around 1 month, for scoping/testing ahead of a larger CP upwelling activity

In addition to the content provided above, over the next several months as TT, Sub-project, and Working group plans and schedules are drafted, this section will list arenas and events where project dependencies and opportunities for coordination will be focused.

PROJECT SCHEDULE

During the next two months the project will remain focused on the confirmation of remaining TT, sub-project, and working group membership and plans. Along with development of plans to work with the TRF members to understand and provide support for their activities and needs.

June marked the beginning of concerted planning for the SC-2 session to be conducted at CSIRO in Hobart, Australia on 14-17 October. With the assistance and support of CSIRO, IMOS and Ocean Leadership resources logistics and resources are being identified and secured.

In lieu of a formal project schedule, the project is currently being tracked through Action Tables generated at SC and TT meetings. These Action Tables were updated and presented in the April Monthly Status Report. In time this section of the MSR will provide select glimpses of the Integrated Master Schedule once it is produced. This tool will be brought together once the TTs, sub-projects, and working groups formulate their plans and deliverables.

SPONSOR CONTRIBUTIONS

In addition to the in-kind self-support agreed to during the January TPOS Workshop, the following explicit sponsorships have been recorded thus far:

- April 2015: Launched DPO Node negotiations with the First Institute of Oceanography (FIO) of China, for possible initiation in late 2015
- Mar. 2015: Integrated Marine Observing System (IMOS), DPO Node (Associate Project Manager and SC-2 Support)
- Dec. 2014: NOAA Climate Office, DPO Support (0.5 FTE DPO Project Manager)
- October 2014: KIOST, SC-1 Hosting
- October 2014: GOOS support for SC-1; GCOS for WMO and IOC briefings
- Aug. 2014: NOAA PMEL – Project Management Support (0.2FTE DPO Deputy Project Manager)
- Aug. 2014: NASA - Interim Project Management Support (0.30 FTE in 2014)
- Jul. 2013: OOPC Project Management and Coordination (Secretariat)