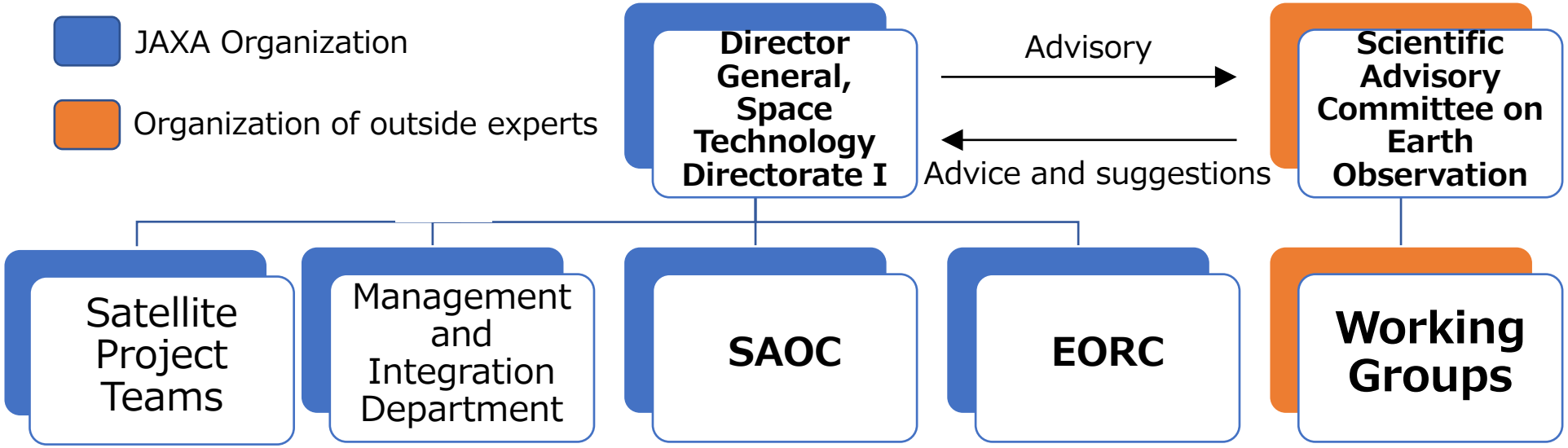
Future mission Study Task Team Activity Status

Jan 20, 2022

JAXA　Space Technology Directorate I

The Secretariat of task team

Scientific Advisory Committee and Working Groups



1. **Activities of the Scientific Advisory Committee on Earth Observation** will provide advice and recommendations on:
   - research activities with scientific point of view
   - existing and future satellite missions
   - collaboration with universities and research institutes
2. **Working Groups**

❍ Cross-disciplinary
- Future Mission Study Task Team

❍ Project Support
- PMM WG
- EarthCARE WG
- AMSR WG
- SGLI WG
- DWL WG
- ALOS-3 F/O WG

Future Mission Study Task Team (1/2)

Name	Organization	Note
T. IWASAKI	Tohoku Univ.	Chair
Y. HONDA	Chiba Univ.	SGLI WG Chair/TF rep.
H. MASUNAGA	Nagoya Univ.	AMSR WG Chair
A. TAKAHASHI	Nagoya Univ.	PMM WG Co-Chair (Future Mission)
M. SATO	Univ. of Tokyo	EarthCARE WG Chair
S. ROKUKAWA	Univ. of Tokyo	TF rep.
A. IWASAKI	Univ. of Tokyo	TF rep.
M. TAKAYABU	Univ. of Tokyo	Science Council rep./PMM WG Co-Chair
N. EBUCHI	Hokkaido Univ.	Science Council rep.

Future Mission Study Task Team (2/2)

Name	Organization	Note
T. YOKOTA	Toyo Univ.	Atmospheric chemistry expt.
M. KAWAMIYA	JAMSTEC	Earth system model expt.
K. SUZUKI	Univ. of Tokyo	Atmospheric model expt.
M. HORI	Univ. of Toyama	Snow and ice expt.
K. NASAHARA	Univ. of Tsukuba	Ecosystem (land) expt.
T. HIRAWAKE	Hokkaido Univ.	Ecosystem (ocean) expt.
K. YOSHIMURA	Univ. of Tokyo	Land hydrology expt.
K. OKAMOTO	JMA/MRI	DWL WG Chair
M. HASHIZUME	Univ. of Tokyo	Public health expt.

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Purpose of the Activities

- Based on the national policies including **The Basic Plan on Space Policy**, the Task Team summarizes JAXA's roles and draft plans of Earth observation satellites from a scientific and technological perspective, in order to use them as a reference to revise implementation plans as a mid-short term idea, and to promote them looking 20-30 years ahead, and then makes its recommendations to JAXA.
- The recommendations should be prepared with consideration for the consensus of the scientific communities to Earth observations using satellites, based on requests to the future Earth observation satellites from the **Science Council of Japan** and "**The Task Force on Future Space R&D System of the Subcommittee on Remote Sensing (TF)**", reviewing successors to existing missions in other working groups.

Procedure of discussion

- Discuss the desirable Earth observation and JAXA's role from a mid- to long- term perspective (20-30 years), including Earth science and implementation of its outcome, based on analysis and discussion made by Science Council of Japan and Task Force (TF) of Subcommittee on Remote Sensing.
  - In the latest "Basic Plan on Space Policy", Earth observation is defined as a measure "to contribute to strengthening of disaster risk management and national land security and combating global issues."
  - Topics about satellites in the operational or development phase will be discussed by the designated working group.
- Define objectives of scientific research and implementation of its outcome as well as converge the direction of technological feasibility by iteration between science community and JAXA's engineers.
- Compile a result of discussion about the following agenda into a report.
  - A) Political and social issues to contribute.
  - B) Scientific scenario including feasible applications of its outcome.
  - C) Strategy for realization in terms of data or physical quantity to observe, necessary satellite systems, role of satellite sensors.
  - D) Development of technology from perspective of 20-30 years ahead.

Earth observation program

- To growth and maintain Earth observation systems and their services by national budget, establishment of **“Earth observation program”** is indispensable.
- Establishment of **“Earth observation program”** means to integrate individual Earth observation missions and achieve the objectives as a whole.
  - Consider a plan based on **linkage of individual missions**.
  - Identify the end users and consider a plan to create a sustainable **“ecosystem”** – a cycle of utilization by the end users and creation/feedback of new needs to JAXA.
  - **Define JAXA’s role** in a whole picture including relationship with projects by ministries and business sectors.

Common understanding and condition for Future Mission Study TT to write the report

- Aiming “pursuit of happiness by sustainable development under global environmental change”, human beings should understand global environmental change, project and prepare for the future.
  1）Understanding interaction of global environment and its process,
  2）Significantly improving projection capability of global environmental change,
  3）Multiple and variety of Earth observation missions are indispensable, and
  4）Promote innovative research by utilization of big data/numerical models and implementation of its outcome in the society
    - Explain why a single sensor/satellite is not enough to acquire necessary data and solve social issues.
    - Explain new effect and value by integration of variety of satellite observation systems, data and numerical models.
    - Explain technology, including its specific scenarios, to acquire necessary parameter.

- Considering that other countries address social challenges by multiple satellite systems, what responsibilities should Japan/JAXA take?