WEBINAR LOGISTICS

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THIS MEETING IS BEING RECORDED

- **Starting Time?** We will begin promptly at the announced starting time (Eastern Time).

- **Webinar Audio?** US/Canada participants dial 1-888-469-1754 or 1-773-756-4633 and announce passcode: Future Earth to be joined to the audio bridge in listen-only mode. International Participants dial the appropriate free-phone number for your specific country listed on the chart found at URL: [http://sites.nationalacademies.org/PGA/biso/futureearth/index.htm](http://sites.nationalacademies.org/PGA/biso/futureearth/index.htm).

- **Q&A Session?** Questions will be accepted via live audio and via email at future-earth@nsf.gov for reply during the announced Q&A period.

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Future Earth
North American Consultation
Webinar I
I. Background and History - James Syvitski
II. Research Strategy - Diana Liverman
III. Governance Structure and Transition Strategy - Peter Liss
Future Earth
Background and History
North American webex, May 2013
James PM Syvitski, IGBP Chair
1980: WMO, IOC, ICSU
1986: ICSU, IUBS, SCOPE, UNESCO
1991: ICSU, ISSC, UNU
1996: IGBP, IHDP, DIVERSITAS, WCRP
2001: Earth System Science Partnership
Integrated Earth-system Approach

• International research on the planet's key biogeochemical processes including humans since 1986

• Integrated Earth-system approach — globally & regionally.

• Addressing impacts, adaptation and vulnerability

• Application of models, inter-comparisons & data evaluation
International Geosphere-Biosphere Programme

✧ Analysis, Integration & Modeling of the Earth System
✧ Global Land Project
✧ International Global Atmospheric Chemistry
✧ Integrated Land Ecosystem-Atmosphere Processes Study
✧ Integrated Marine Biogeochemistry & Ecosystem Res
✧ Land-Ocean Interaction in the Coastal Zone
✧ Past Global Changes
✧ Surface Ocean—Lower Atmosphere Study
World Climate Research Programme

✧ Climate and Cryosphere
✧ Climate Variability and Predictability
✧ Global Energy and Water Exchanges
✧ Stratospheric Processes and their Role in Climate

International Human Dimensions Programme

✧ Earth System Governance Project
✧ Global Land Project
✧ Land-Ocean Interactions in the Coastal Zone
✧ Integrated History of People on Earth
✧ Integrated Risk Governance
✧ Urbanization and Global Environmental Change
bioGENESIS
bioDISCOVERY
ecoSERVICES
bioSUSTAINABILITY
agroDIVERSITY
ecoHEALTH
freshwaterBIODIVERSITY
Global Mountain Biodiversity Assessment

Earth System Science Partnership
Global Carbon Project
Global Environmental Change and Food Systems
Global Environmental Change and Human Health
Global Water System Project
A new initiative arising from converging efforts

ICSU – ISSC Visioning

Seeking stronger partnership

Belmont Forum

Delivering Knowledge to Support human action and adaptation to regional environmental change.
Co-designed by a global Alliance of partners
**GECs**

**Important Dates**

**ESSP**
- **Ended Dec 2012**

**FE Transition Team**
- **Spring 2013**

**IHDP**
- **Ends Jun 2014**
- **Fall 2013**
  - Project transition begins

**DIVERSITAS**
- **Ends Dec 2014**
- **Spring 2014**
  - Permanent Secretariat

**GLOBAL change**
- **Ends Dec 2015**
- **Dec 2015**
  - Projects transition is complete

**WCRP**
- **Continues**
An international platform for

RESEARCH COORDINATION | ENGAGEMENT & COMMUNICATION

Society
Policy
Industry
Media
Educators
NGOs
Future Earth Research Themes

Transformation towards Sustainability

Global Development

Dynamic Planet
Criteria for Future Earth research

- From fundamental to actionable Earth system research for global sustainability
- Answers to complex questions that require international collaboration
- Co-design and co-production of knowledge
- Integration of natural, economic, engineering, arts, humanities and social sciences
- Regional to global scale
Old habit of pushing latest advances vs. Co-production of science and society

Earth’s life support system is intimately-linked to society
Future Earth to continue the strong leadership of past Programmes
has some big shoes to fill but is aided by a clear vision to provide critical knowledge required for societies to face the challenges posed by global environmental change and to identify opportunities for a transition to global sustainability.
II. Research Strategy- Diana Liverman

future\textit{earth}

research for global sustainability
To provide the knowledge required for societies in the world to face risks posed by global environmental change and to seize opportunities in a transition to global sustainability
Some of the challenges we face

• Food, water and energy for 9+ billion people within sustainable planetary boundaries
• Valuing and protecting nature’s services and biodiversity
• Adapting to a warmer and more urban world
• Transitioning to low carbon societies
• Providing income and innovation opportunities through transformations to global sustainability
• Reducing disaster risks
• Aligning governance with stewardship
Request to the transition team

Design a *more integrated, interdisciplinary and international* research program to understand and solve the challenges of global environmental change

• Respond to a growing sense of urgency about global change and to expanded interest from stakeholders

• Strengthen connections from Earth system science to social science and other disciplines

• Codesign the initiative with funders and users

• A strategy to support and enhance existing projects and networks with improved funding, infrastructures, less duplication, and regional foci
The Transition Team

Many disciplines, sectors, regions

for a co-design effort

17 individual capacity members, 12 ex-officio (ICSU, ISSC, Belmont Forum, UNESCO, UNU, UNEP) and Global Environmental Change Programme Directors
Research Strategy: What do people want to know about global environmental change?

How and why the global environment is changing, what are likely future changes and what the implications are for human wellbeing and other species, what choices can be made to reduce harmful risks and vulnerabilities and enhance resilience, and how this knowledge can support decisions and sustainable development.
The approach to organizing Future Earth research

1) Develop a conceptual framework
2) Identify a set of research themes
   - broad areas in which research will be carried out
   - example research questions
3) Populate with existing and new projects
4) Propose ways to govern the initiative
Conceptual framework for Future Earth

Global sustainability within Earth system boundaries

Cross-scale interactions from local to regional and global scales

Human and natural drivers

Pathways to Sustainability
Transformations and Solutions

Human well-being

Global Environmental Changes
Research Themes

1. Dynamic Planet
2. Global Development
3. Transformation towards Sustainability
Dynamic Planet:

Observing, explaining, understanding, projecting earth, environmental and societal system trends, drivers and processes and their interactions; as well as anticipating global thresholds and risks.
Global development:

Providing the knowledge for addressing the most pressing needs of humanity including sustainable, secure and fair stewardship of food, water, biodiversity, health, energy, materials and other ecosystem functions and services.
Transformation towards Sustainability:

Understanding transformation processes and options, assessing how these relate to human values and behavior, emerging technologies and economic development pathways, and evaluating strategies for governing and managing the global environment across sectors and scales.
To facilitate integration across research themes, science will be supported by a set of cross-cutting capabilities in science and outreach (many delivered through partnerships).

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<tr>
<th>Future Earth Cross Cutting Capabilities</th>
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<td>Science-Policy Interface and interactions</td>
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Dynamic Planet: Example questions

• What approaches, theories, and models allow us to explain the functioning of Earth and socio-ecological systems, understand the interactions between these mechanisms, and identify the role of feedbacks and evolution within these systems?

• What are the states and trends of key environmental components such as climate, soils, the cryosphere, biogeochemistry, biological diversity, air quality, freshwater, and oceans, and in the human drivers of change, such as population, consumption, land and sea use, and technology. How do these relate to the states and dynamics in the social foundations of sustainable development, including well-being, equality, health, education, human security? How and why do these vary across time, space, and social context?

• What changes are predicted under the most likely scenarios of natural and social driving forces and Earth, social and biological system responses?
Dynamic Planet: Example questions

• What are the risks of rapid or irreversible changes, of crossing regional to global thresholds and planetary boundaries and inducing tipping points and social-environmental crises due to global environmental change?

• What can be understood and anticipated about the condition and future for critical zones and biomes such as coasts, tropical forests, arid zones or polar regions?

• What kind of integrated global and regional observing systems and data infrastructures are needed to document and model the coupled earth system and the anthropogenic drivers and impacts of change? Can we develop reliable monitoring systems, models and information systems and services that anticipate and provide early warnings of large scale and rapid change?
Global development: example questions

• What insights and innovations in basic earth, biological and social sciences are most important to the environmental bases of sustainable development?

• What are the patterns, trade-offs and options for equitable and sustainable use of resources and land, and how can we ensure sustainable access to food, water, clean air, land, energy, genetic resources and materials for current and future populations?

• What are the implications of global environmental change including climate change for food, water, health, human settlements, biodiversity and ecosystems? How can climate services, ecosystem management and disaster risk assessment reduce these impacts and build resilience?

• What are the links between biodiversity, ecosystems, human well-being and sustainable development?

• How socially and environmentally effective, efficient and equitable are alternative approaches for conceiving, measuring and implementing development projects and initiatives?
Global development: example questions

• How should Sustainable Development Goals be defined in order to enable the twin-goals of world development and global sustainability?
• What options are available to provide energy for all with reduced environmental impacts, and what are the social implications of these energy choices?
• How can the business and industrial sector contribute to development, prosperity and environmental stewardship through the management of their production and supply chains?
• How does global environmental change affect distinct groups in society such as Indigenous people, women, children, subsistence farmers, business, the poor or the elderly? How does their environmental knowledge contribute to solutions for sustainable development?
• What options are available in terms of ecosystem restoration to restore the environmental bases of sustainable development?
Transformation towards sustainability

- How can governance and decision-making be aligned across different levels, issues, and places to manage global environmental change and promote sustainable development? What is known about the successes and failures of different actors in managing global environmental change, at different scales, and using different strategies?

- Can technologies provide viable solutions to global environmental change and promote sustainable development? What are the opportunities, risks and perceptions associated with emerging technologies such as geo-engineering or synthetic biology? How can technology and infrastructure choices be combined with changes in institutions and behaviours to achieve low carbon transitions, food security and safe water?

- How do values, beliefs and worldviews influence individual and collective behaviour to more sustainable and mindful lifestyles, patterns of trade, production and consumption? What triggers and facilitates deliberate transformations at the individual, organizational, and systems levels; what socio-political and ecological risks does it entail?

- What do we know about past transformations of the Earth System, as well as in ideas, technology and economy and how can the knowledge and lessons learned guide future choices?
Transformation towards sustainability

• What are the longer-term pathways towards sustainable urban futures and landscapes, successful and sustainable ‘blue societies, and a green economy?

• What are the implications of global environmental change for conservation of species and landscapes including the possibilities for restoration, reversal of degradation and relocation?

• How can the Earth and social system adapt to environmental changes that could include warming of more than 4°C over the next century?

• Can our present economic systems, ideas and development practices provide the necessary framework to achieve global sustainability and if not, what can be done to transform economic systems, measures, goals and development policies for global sustainability?

• What are the implications of efforts to govern and manage the Earth system for sustainability for scientific observations, monitoring, indicators and analysis? What science is needed to evaluate and assess policies and facilitate and legitimise transformation?

• How can the massive volume of new geophysical, biological, and social data, including local knowledge and social media be managed and analysed so as to provide new insights into the causes, nature and consequences of global environmental change and to facilitate the identification and diffusion of solutions?
III. Governance Structure and Transition Strategy - Peter Liss
FUTURE EARTH
GOVERNANCE STRUCTURE

Peter Liss
School of Environmental Sciences
University of East Anglia,
Norwich, UK

Currently at Texas Institute for Advanced Study
Texas A & M University
A 10-year initiative by a new international Science and Technology Alliance for Global Sustainability

Future Earth: research for global sustainability

WMO is an observer
The Alliance

• A growing, multi-stakeholder partnership
• Established Future Earth
• Will promote and support the further development of Future Earth
• By building and maintaining the enabling conditions for Future Earth to operate successfully
The overarching decision-making body, providing strategic guidance on and oversight of Future Earth’s operations and resource mobilisation

To comprise scientists from different fields, policymakers, business, industry and other stakeholders from different parts of the world

Will be appointed by the Alliance

Between now and May 2014 the Alliance will function as an interim Governing Council
They must work closely together

The Engagement Committee:
- To guide/oversee implementation of co-design/production/dissemination of research
- To include voices from e.g. business, civil society and government
- Will be established by late 2013 and appointed by the Alliance
- Role in outreach, communication, regional activities

The Science Committee:
- Provide scientific guidance, propose new projects and priority issues, and secure the highest quality research
- Represent the full spectrum of scientific fields, as well as scientists from other sectors
- Will be established early 2013; appointed by ICSU/ISSC on behalf of the Alliance
To implement the strategies and activities approved by the Governing Council, carrying out the day-to-day functions of Future Earth

- To act as an integrator and facilitator, also coordinating access to cross-cutting capabilities
- To be established via an open, competitive call that will be issued by the Alliance
- An interim Secretariat, bringing together capacities of existing GEC Programme Secretariats will be operational as from early 2013
Future Earth as a globally representative platform

But also a globally distributed platform to ensure that research, capabilities and partnerships are developed at the most relevant level(s)

Role of regions in linking across scales, integrating knowledge, catalysing transformative initiatives
The Science and Technology Alliance for Global Sustainability

Governing Council

Engagement Committee

Science Committee

Executive Secretariat

Transition to global sustainability

Disciplinary science

Projects

Integration & synthesis

Dynamic Planet

Global Development
NEXT STEPS
Consultations timeline

Planets Under Pressure
- March 2012
  - Presentation
  - Town Hall

GEC consultation on research framework programmes and projects
- 29 August – 28 September

Regional workshops
- Africa
  - 31 October – 2 November 2012
- Asia-Pacific
  - 21-23 November 2012
- Latin America/Caribbean
  - 3-5 December 2012
- North Africa/Middle East
  - January – June 2013

• North Africa/Middle East
  • Europe/North America

Online Consultation time TBC

2012
- Rio +20
  - June 2012
    - Launch Science Forum
    - Side event
      Rio Centro

2013
- AAAS Symposium
  - 16 February 2013
- AGU Town Hall
  - 6 December 2012
- EGU Town Hall
  - April 2013
- 4th Transition Team Meeting
  - 28-29 November 2012
Timeline towards implementation

18-month initial design
Transition Team

Future Earth: 10-year initiative

Interim phase
Operational phase

Jun 2011
Dec 2012
Jan 2013
May 2014

ESSP ends
Interim secretariat → Operational secretariat
Interim governance → Governing Council
Science Committee

Transition management board
Integration of existing projects
Call for new projects

2022