

RESEARCH FIELD EARTH AND ENVIRONMENT

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RESEARCH FIELD EARTH AND ENVIRONMENT

Mission

- We study fundamental functions of System Earth
- We assess influences, limits, and potentials of Earth's sub-systems resilience and use
- We provide basic and applied knowledge from atmospheric, marine, polar, coastal, terrestrial and solid Earth research
- We engage in preventive research e.g. natural disasters, climate change
- We conduct research to help shape management concepts
- We develop strategies and options for political actions

(Period 2014 – 2018)

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Facts and Figures

8 Centers (status 2016)

- **Budget:**
 - 385 Mio. €** core funding
 - 130 Mio. €** third-party funding
- **Scientists:**
 - 1,175 FTE** core funded
 - 580 FTE** third-party funded
- **Output:** **>3,000 ISI papers**
- **Infrastructure:** Long term, complex and interdisciplinary facilities for comprehensive Earth system research in Helmholtz, and to support the national/international community



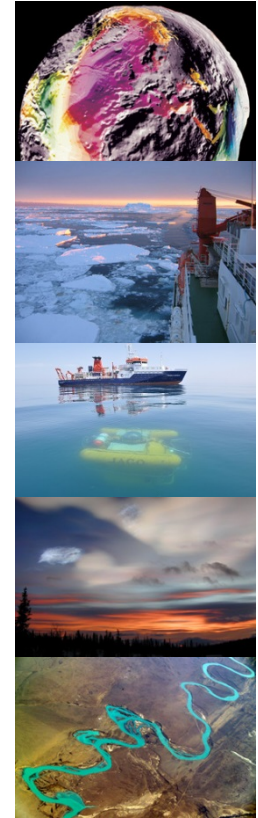
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Partners

Five research programs:

- **Geosystem – The Changing Earth** (GFZ, GEOMAR)
- **PACES II – Marine, Coastal & Polar Systems** (AWI, HZG)
- **OCEANS – From the Deep Sea to the Atmosphere** (GEOMAR, GFZ)
- **Atmosphere and Climate** (KIT, FZJ, GFZ)
- **Terrestrial Environment** (UFZ, FZJ, HMGU)

(Period 2014 – 2018)



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Research Infrastructure and Large-scale Devices

- **Satellite systems:** GRACE, ATMOSAT (*proposed*)
- **Research airplanes:** HALO, In-Service-Aircraft IAGOS, Polar 5 & 6
- **Research vessels:** i.e. Polarstern, Heincke, Poseidon, Alkor
- **Observatories:** TERENO, Neumayer-III, MESI, MOSES – Modular Observation Solutions for Earth Systems
- **Computing facilities:** ESM Tier-0/1, HLRE-3 and -4



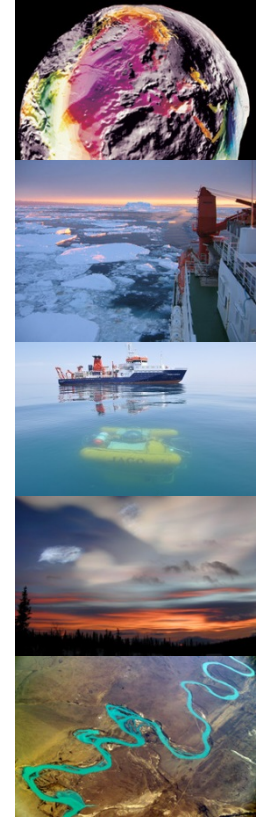
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Grand Challenges

We contribute Earth System knowledge addressing the following societal challenges:

- Earth system dynamics and risks
- Climate variability and climate change
- Availability of water and water management
- Ecosystem dynamics and biodiversity
- Sustainable use of resources
- Socio-economic dimension of global change

(Period 2014 – 2018)



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Joint and Transfer Activities

Focus on Research:

- Helmholtz Climate Initiative REKLIM
- Joint infrastructure/monitoring projects ACROSS and MOSES
- Earth System Modeling – ESM

Focus on Knowledge Transfer and Stakeholder Interaction:

- GERICS Climate Service Center Germany (national) and regional climate offices / Services for Adaptation
- Earth System Knowledge Platform – ESKP

(Period 2014 – 2018)



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Cooperation Strategies

- **Regional networks** with universities and local partners
- Several alliances at **national level** with partners from universities, other academia, and enterprises
- **International participation** in leading networks and high-level projects
- Coordinating and participating in **EU-projects** (> 100) with high visibility, e.g. ECO2 , IMPACT2C, MATRIX, MODELKEY, LUC4C, PAGE21, REACH, RECONCILE, SOLUTIONS, STRATOCLIM, (all FP7), ATLANTOS, APPLICATE (H2020), DANUBIUS, EPOS, ICOS (all ESFRI), etc.
- **ECRA** - European Climate Research Alliance, initiated and headed by the research field



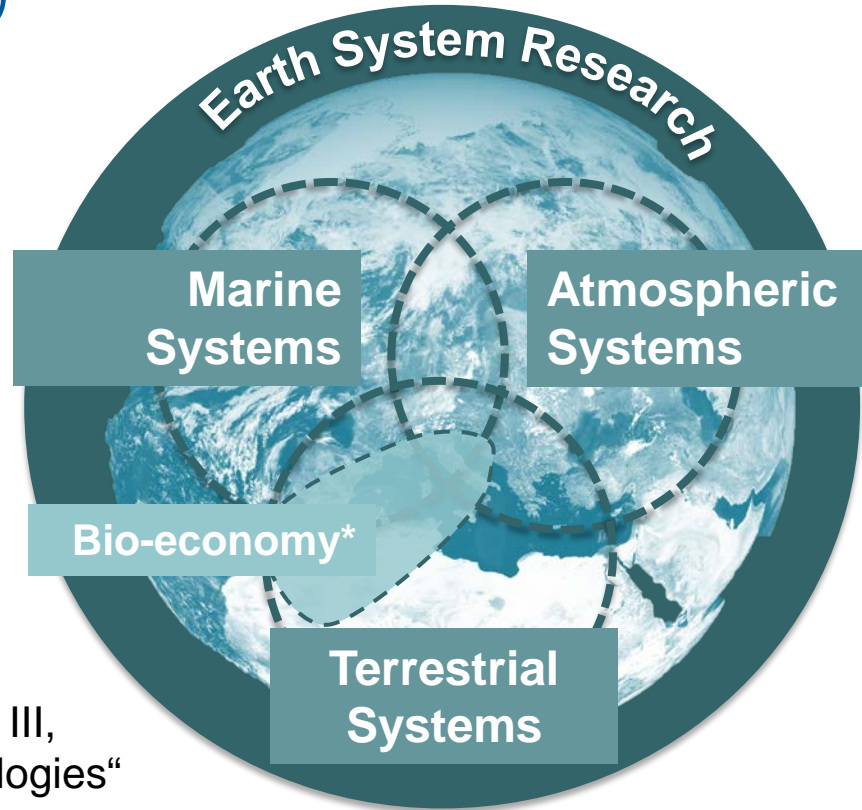
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Talent Management

- **Graduate Schools:** POLMAR (AWI), HITEC (FZJ), HOSST (GEOMAR), GEOSIM (GFZ), HELENA (HMGU), SICCS (HZG), GRACE & MICMOR (KIT), HIGRADE (UFZ), with a total of 240 completed dissertations in 2016
- Competitive **Young Investigator Groups** at all centers; 35 groups currently funded
- Competitive **excellence program** for W2/W3 female professorships (>10)
- Attracting **guest scientists** from all over the world (~450 per year)
- 11 **ERC Starting Grants** and 5 **Consolidator Grants** (FP7, H2020)
- Successful participation in Helmholtz **Recruiting Initiative (RI)**, attracting senior scientists from leading international institutions (17 out of 24 applications)
- Supporting career development by **academy and mentoring programs**

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Future Development (I)



*) To be integrated from PoF III,
Research Field „Key Technologies“

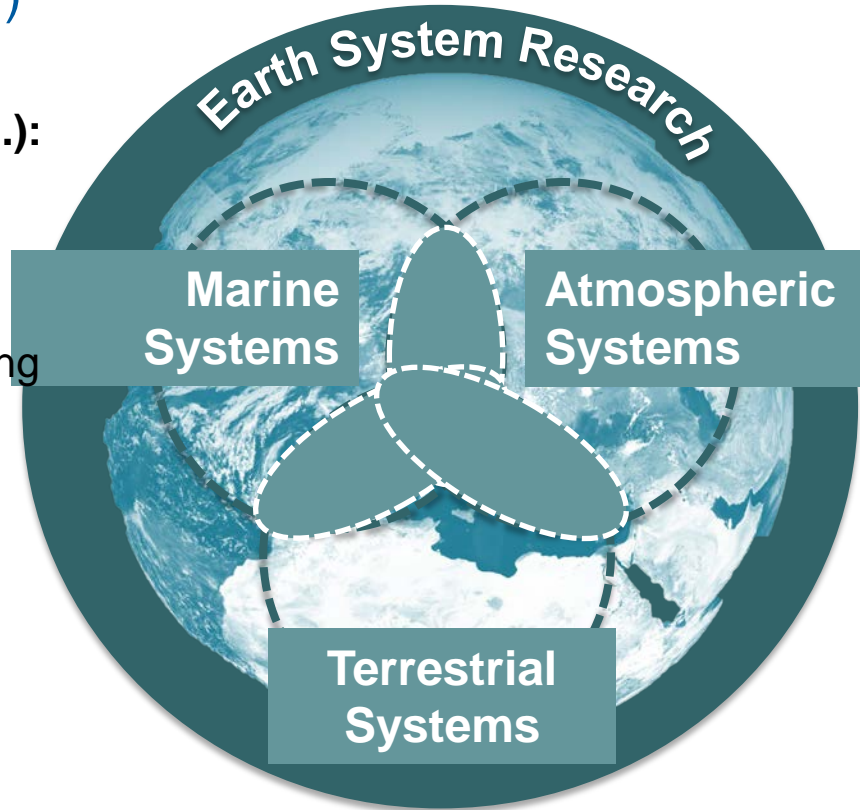
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Future Development (II)

Cross Cutting Themes (e.g.):

- Focus on Carbon Sinks and Sources*
- Identifying and Safeguarding Vulnerable Regions*
- Climate Change and the Anthroposphere*

(*Working titles)

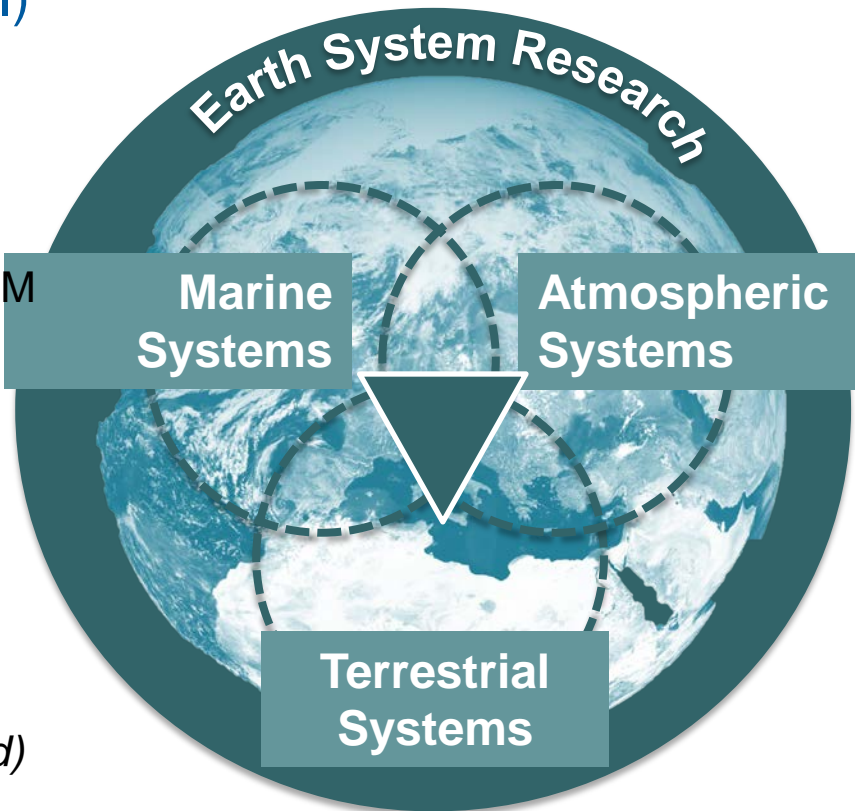


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Future Development (III)

Joint Action Examples:

- Synthesis (REKLIM)
- Earth System Modeling ESM
- Earth Observation
(COSYNA; MOSES)
- Earth Knowledge
(ESKP; GERICS)
- Information Infrastructure/
DIGITAL EARTH (*proposed*)

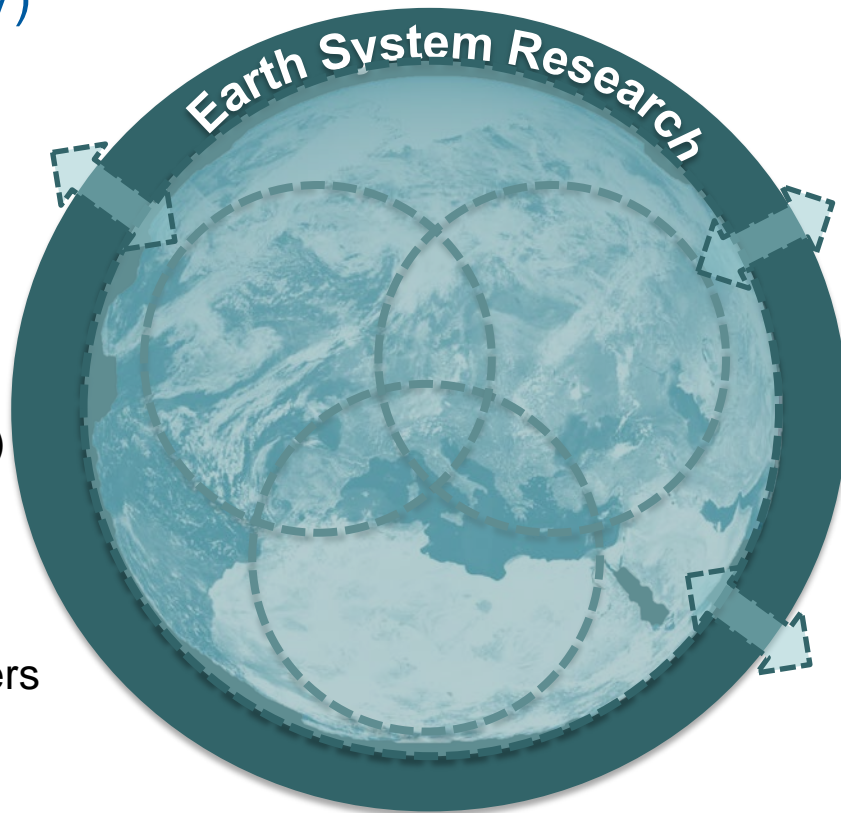


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Future Development (IV)

Cooperation Actions with External Partners:

- National Strategies i.e. Earth System Alliance (D); Infrastructure Roadmap (D)
- EU Flagship Project (*in preparation*)
- Regional Excellence Clusters with Universities



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THANK YOU FOR YOUR ATTENTION