

## Foreword

## Executive Summary

### What is Baltic Earth?

### Grand Challenges

- **Grand Challenge 1: Salinity Dynamics in the Baltic Sea**
- **Grand Challenge 2: Land-Sea biogeochemical feedbacks in the Baltic Sea region**
- **Grand Challenge 3: Natural hazards and extreme events in the Baltic Sea region**
- **Grand Challenge 4: Understanding sea level dynamics in the Baltic Sea**
- **Grand Challenge 5: Understanding regional variability of water and energy exchanges**

### Overarching or cross-cutting activities

- **Regional Climate System Models**
- **Scenario Simulations for the Baltic Sea 1960-2100**
- **Outreach and Communication**
- **Education**

### Infrastructure and international cooperation

# Main part

## 1. Introduction

## 2. Grand Challenges

### 2.1. Grand Challenge 1: Salinity dynamics in the Baltic Sea

- 2.1.1. Research needs
- 2.1.2. Major goals
- 2.1.3. Potential activities
- 2.1.4. Concrete outcomes
- 2.1.5. Involvement of stakeholders
- 2.1.6. WG description and terms of reference

### 2.2. Grand Challenge 2: Land-Sea biogeochemical feedbacks in the Baltic Sea region

- 2.2.1. Research needs
- 2.2.2. Major goals
- 2.2.3. Potential activities
- 2.2.4. Concrete outcomes
- 2.2.5. Involvement of stakeholders
- 2.2.6. WG description and terms of reference

### 2.3. Grand Challenge 3: Natural hazards and extreme events in the Baltic Sea region

- 2.3.1. Research needs
- 2.3.2. Major goals
- 2.3.3. Potential activities
- 2.3.4. Concrete outcomes
- 2.3.5. Involvement of stakeholders
- 2.3.6. WG description and terms of reference

### 2.4. Grand Challenge 4: Understanding sea level dynamics in the Baltic Sea

- 2.4.1. Research needs
- 2.4.2. Major goals
- 2.4.3. Potential activities
- 2.4.4. Concrete outcomes
- 2.4.5. Involvement of stakeholders
- 2.4.6. WG description and terms of reference

### 2.5. Grand Challenge 5: Understanding regional variability of water and energy exchanges

- 2.5.1. Research needs
- 2.5.2. Major goals
- 2.5.3. Potential activities
- 2.5.4. Concrete outcomes
- 2.5.5. Involvement of stakeholders
- 2.5.6. WG description and terms of reference

### **3. Overarching or cross-cutting activities**

#### **3.1. Regional climate system models**

- 3.1.1. Research needs
- 3.1.2. Major goals
- 3.1.3. Potential activities
- 3.1.4. Concrete outcomes
- 3.1.5. Involvement of stakeholders
- 3.1.6. WG description and terms of reference

#### **3.2. Scenario Simulations for the Baltic Sea 1960-2100**

- 3.2.1. Research needs
- 3.2.2. Major goals
- 3.2.3. Potential activities
- 3.2.4. Concrete outcomes
- 3.2.5. Involvement of stakeholders
- 3.2.6. WG description and terms of reference

#### **3.3. Outreach and communication**

- 3.3.1. Research needs
- 3.3.2. Major goals
- 3.3.3. Potential activities
- 3.3.4. Concrete outcomes
- 3.3.5. Involvement of stakeholders
- 3.3.6. WG description and terms of reference

#### **3.4. Education**

- 3.4.1. Research needs
- 3.4.2. Major goals
- 3.4.3. Potential activities
- 3.2.4. Concrete outcomes
- 3.4.5. Involvement of stakeholders
- 3.4.6. WG description and terms of reference

### **4. Baltic Earth organizational structure**

#### **4.1. Baltic Earth Science Steering Group (BESSG)**

#### **4.2. Baltic Earth Senior Advisory Board (BESAB)**

#### **4.3. Baltic Earth Working Groups**

#### **4.4. Baltic Earth Conferences**

#### **4.5. Baltic Earth Science Steering Group meetings**

#### **4.6. The International Baltic Earth Secretariat**

- 5. Road map and implementation**
- 6. Baltic Earth data management**
- 7. International scientific cooperation**
- 8. References**
- 9. List of acronyms and abbreviations**

ANNEX: Members of Baltic Earth Committees (as of April 2015)

ANNEX: Members of the Baltic Earth Science Plan Writing Team

International Baltic Earth Secretariat Publication Series