

# The GlobGlacier project

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# The GlobGlacier project

**New activity within ESA's Data User Element (DUE) programme**

***Aim:***

**Establish services for operational glacier monitoring from space, complementing and strengthening the existing services and network**

***Users:***

**Science community studying glaciers in the context of climate change**

***Budget:***

**950 K€**

# Objectives

## *Products responding to*

- **Operational needs & requirements of a certain number of users who will be actively involved in the project**
- **Requirements of the GCOS implementation plan for UNFCCC & GCOS "Systematic Observation Requirements for Satellite-based Products for Climate"**

## *Priority application areas:*

- **complementing and completing the WGI with 2D vector outlines**
- **changes in glacier length, size, and volume**
- **global trends of climate change and sea level rise contribution**

# Service extent

Total number of glaciers to be investigated will vary according to the information products: from selected mass balance glaciers to tens of thousands of glaciers worldwide

**Geographical areas:** glaciers from at least

- Europe – Alpes
- Europe – North
- Africa
- Asia
- South-America
- North America
- New Zealand

**Time period:**

Glaciers will also be analyzed over time, going back 10-20 years.

# User requirements meetings

**22-23 June 2006, University of Zurich**

**16 August 2006, Cambridge**

**Objectives: Define requirements for the information products to be developed and implemented in the GlobGlacier project**

## **Output of the meeting:**

- A user requirements document with six products
- Confirmed interest from meeting participants to participate
- Document for a proposed co-operation between GlobGlacier and the GLIMS initiative

## Involved user groups:

- **WGMS**
- **GLIMS**
- **scientists (cryosphere, climate modelling, sea-level-rise)**

## Interested users:

- **GTOS/GCOS**
- **UNESCO (GRID-Geneva)**
- **hydrological programmes and organisations**
- **further scientists and the general public**

## **Areas of interest:**

- **Representative key regions (without the two Ice Sheets)**
- **entire mountain ranges or massifs**
- **several 10'000 km<sup>2</sup>**

## **Selection criteria for representative regions:**

### **Climate change detection:**

- **Include and extend available long-term in-situ measurements**
- **Bridge geographic gaps of the world glacier inventory (WGI) also with respect to DEM coverage (outside SRTM)**
- **include different glacier geometries (size, aspect, dynamics, ...)**

### **Sea level rise:**

- **Large area covered, climatically sensitive region**

***Close coordination with GLIMS and WGMS***

# Products

- 2. Area:** Digital map of glacier outlines + a level 2 product that can readily be ingested into the GLIMS database (including individual glaciers with topographic parameters)
- 3. Snowline:** Position of the end of summer snowline (ELA) for mass balance determination
- 4. Terminus position:** Coordinates of lowest glacier elevation or vector line marking the terminus
- 5. Topography:** Digital map of surface elevation (DEM), both from the ice surface and outside
- 6. Elevation change:** Time slices of DEMs or point elevation trends
- 7. Velocity:** Velocity fields or velocities at individual points



- **Planned start: Summer 2007**
- **Duration: 3 years**
- **Three project phases:**
  - Definition phase (6 months)
  - Development phase (10 months)
  - Production and Validation Phase (20 months)

- **5 consortium partners & 5 PhDs**
  - Universities of Zurich (lead), Oslo and Edinburgh
  - Gamma Remote Sensing (CH) and ENVEO (AU)
- **5 work packages covering the 6 products**
  - each lead by one of the consortium members
  - close interactions among the WPs
  - full documentation of applied standards / techniques
- **Close interaction with user groups**
  - 4 user meetings in Zurich defining the requirements, testing the products, reporting about the service
  - advisory board provides guidelines global outreach

# GlobGlacier Organigram

start here

user requirements

data survey

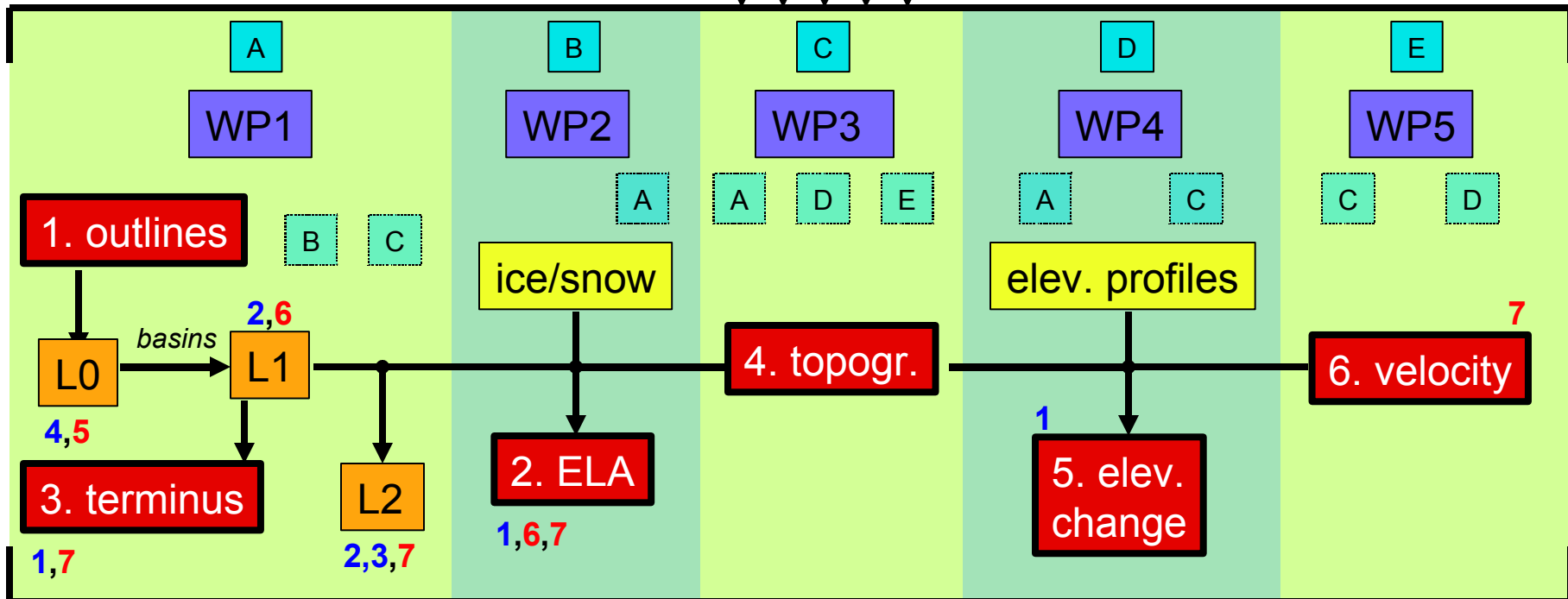
GAPS?

all EO data

key regions

EO survey

OK?



data integration

## WP Manager

- A: Paul
- B: Rott
- C: Kääh
- D: Shepherd
- E: Strozzi

Work Package

intermediate prod.

final product

URD

work flow

## Data integration

- data bases (WGMS, GLIMS)
- web page (meta-information)
- publications (products & science)
- public outreach

## User groups

- Organisations**
- 1: WGMS (FoG)
  - 2: GLIMS
  - 3: GCOS (WGI)
  - 4: IPCC

- Modelling**
- 5: Climate
  - 6: Hydro
  - 7: Cryo
  - 8: SLR