

# The COST Action ES0701 and the role of absolute gravimetry in it

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absolute gravimetry in WG1)

# COST = European Cooperation in Science and Technology

- <http://www.cost.esf.org/>
- based on an inter-governmental agreement
- Funds cooperation and networking:
  - Science management / working group meetings
  - Scientific workshops and seminars
  - Short Term Scientific Missions (STSMs)
  - Training Schools and Research Conferences
  - Dissemination
- Does not fund science itself
- which is expected to have national funding
- 9 domains, around 200 Actions
- The ES0701 action belongs to the domain ESSEM =Earth System Science and Environmental Management

# COST ES0701 – Improved Constraints on Models of Glacial Isostatic Adjustment

- Chair Matt King, University of Newcastle
- Runs until April 28, 2012
- [http://w3.cost.esf.org/index.php?id=205&action\\_number=ES0701](http://w3.cost.esf.org/index.php?id=205&action_number=ES0701)
- <http://www.cost-es0701.gcparks.com/>
- Austria, Belgium, Denmark, Estonia, Finland, France, Germany, Greece, Iceland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom
- Still possible to join

# COST ES0701 – Improved Constraints on Models of Glacial Isostatic Adjustment

- The main objective of COST Action ES0701 is to place improved constraints
- on models of glacial isostatic adjustment (GIA)
- through the development of state-of-the-art surface velocity measurements.
- Addresses the current uncertainty in polar ice mass contributions to present-day global sea level rise
- by producing more accurate models of GIA
- and then apply them to produce new, more accurate, ice mass change signals
- from the Gravity Recovery and Climate Experiment (GRACE) satellite mission

# COST ES0701 – Improved Constraints on Models of Glacial Isostatic Adjustment

- WG1, Leader: Johannes Boehm,  
Geodetic observation-level modelling and systematic biases
- WG2, Leader: Pascal Willis  
Velocity determination/reference frame realization
- WG3, Leader: Simon Williams  
Noise characteristics of station coordinate time series/velocities
- WG4, Leader: Bert Vermeersen  
GIA model optimisation and ice mass balance computations

# Absolute gravimetry

- sub-group in WG1
- last year “Workshop on hydrological and other local effects in gravity measurements”, Royal Observatory of Belgium, March 16-17, 2009
- <http://www.cost-es0701.gcparks.com/activities/conferences/workshops>

## Potential applications of repeated AG in the action (III)

- Use repeated AG data as an independent geodetic dataset in WG4.

## Possible applications of repeated AG in the action (II)

- Use AG data in the global reference frame fixing and velocity estimation by WG2, as an independent information on vertical velocities relative to the Earth's center of mass.
- An offset in  $g\_rate$  vs.  $h\_rate$  would reveal a  $x\_rate$ ,  $y\_rate$ , or  $z\_rate$  problem for the origin of the frame
- Requires appropriate geographic distribution and a large amount of stations to average out gravity “noise” due to e.g. local phenomena

# Possible applications of repeated AG in the action (I)

- Use AG data within the WG1 on a regional or station-by-station basis as a consistency check for vertical rates from geometric techniques
- Can be done with single AG stations

# Proposal from WG4

- create a spreadsheet (Excel file) with “known”  $g_{dot}$  for  $h_{dot}$  (CGPS) stations for COST internal use
- such that the “GPS” people could quickly compare it with the  $h_{dot}$  and
- composed primarily from published results
- all over the world and not only GIA areas
- only the  $g_{dot}$  and no observations
- given as a task to JM
- QUESTION: is it OK to include the rates calculated for the AG talk of today from all the data
- if not, I will use rates calculated from the published subset of the data only