Outreach
-” The geodetic way”
The ultimate communication challenge

STATENS KARTVERK

Starting point

- The general knowledge about Geodesy is about zero
- Our most important decision-makers does not consider geodesy a key player within earth observation or climate research
- The recruitment of students is not on a sustainable level (?)

But on the positive side:

- We have an incredible story too tell!
- The potential is great – we haven't used any of it yet

Today's public perception of Geodesy

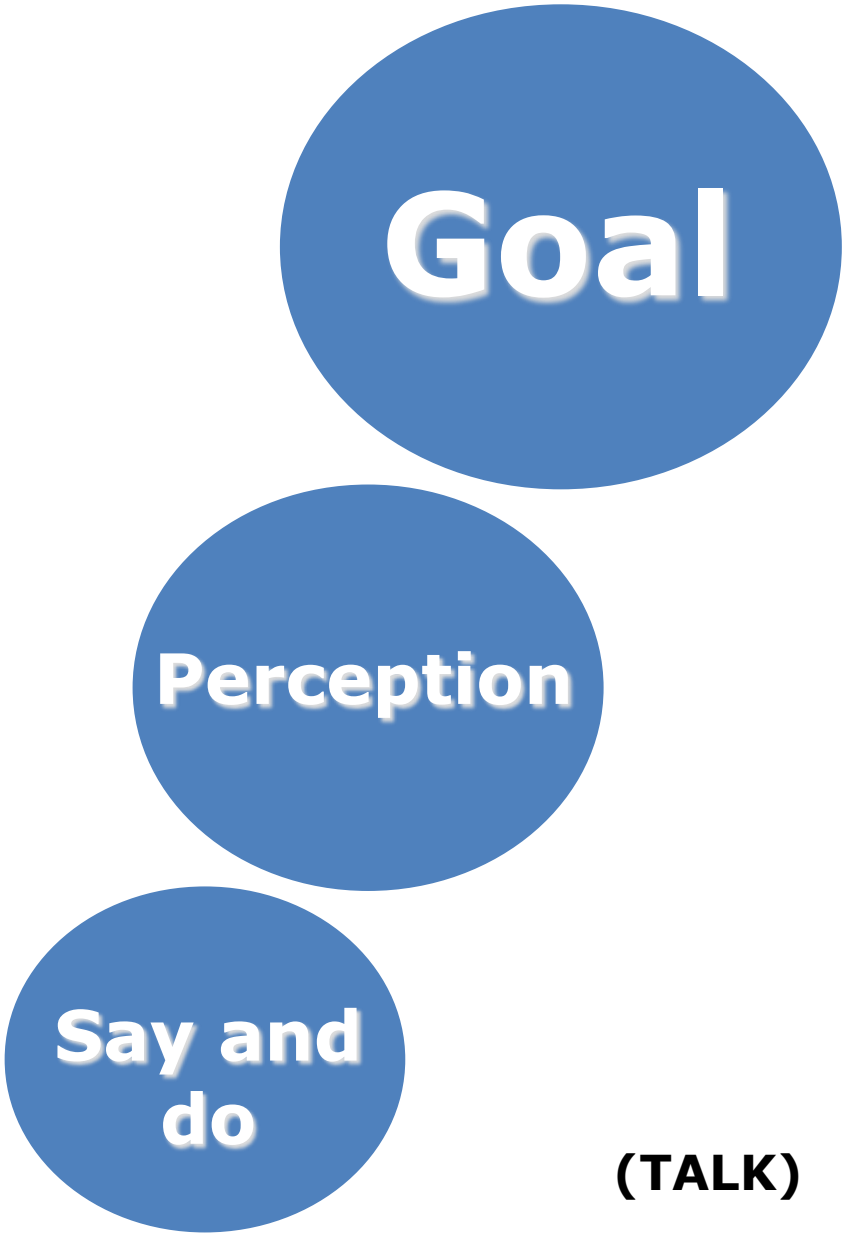
WHAT WE NEED IS TARGETED COMMUNICATION

- Become conscious of which objectives we want our communication to achieve our goals
- Understand the simple connection
  - What we say and do…
  - …creates an impression…
  - …which contributes positively or negatively to achieving an objective we have set for ourselves

(TALK)

SET OBJECTIVES – CREATE PERCEPTION

- What do I need to **say or do**
- To create the **perception**
- Which contributes to me **reaching my goal**!



(TALK)

RINGERIKE I DAG?

TRAUST ROLIG SMÅKONGER






INDUSTRI NATUR JORDNÆR

RINGERIKE I MORGEN?

utvikling

stillhet

samarbeid

frihet






livskvalitet

teknologi

energi

miljø

Communication goals

- Reaching our strategic goals
  - CPOS 1 cm or better
  - EGNOS and GALILEO precision in the northern areas
  - Take a position as a key contributor to earth observation in general and climate change in particular
- Establish a ”governmental understanding” and funding for our key projects (VLBI Ny-Ålesund a.o)

Communication strategy

- Translate the geodetic terms into “Human language”
  - Simplify the language, not the science
- Find an open position in the “Earth observation market” – and take it!

Tools and target groups

- We need funding! – government and decision makers is our primary target group
- We need partners with credibility
  - NASA
  - IVS
  - Norsk Romsenter
- We have to be part of the public debate
  - Forskning.no
  - Havnivå.no
  - Participation in Conferences etc
- Constantly looking for opportunities for reaching our target group
- “The Svalbard Post” is probably just as important as the main newspapers

The position: Sea level

- Everybody has an opinion
- A lot of debate – and a lot of nonsense
- Key elements within our science is not taken into account (or understood)when scenarios is published

Geodesy is important and necessary, both for research purposes and increasing the public knowledge

Who is our key communicators?

- And we need our **management** and **leading scientists** to communicate the message consistently:
  - Making presentations
  - Establish the story – creating the wanted perception
- And they need to be good at it!
  - Communication training and presentation skills

- And then need to continuously connect our goals to government policy and targets

From idea to ”live communication”

What did we do at NMA last year in order to reach our stakeholders and decisionmakers?

Storting proposition (Bill)

“The Norwegian Mapping Authority will conduct scientific measurements to monitor climate and other global changes.”

From the Svalbard White Paper:

"Substantial investments have been made in Ny-Ålesund over the past 10-year period. As a result, this site provides a very good and functional base for international scientific research and climate monitoring. The overall goal of these investments is ***to develop Ny-Ålesund into one of the world's leading sites for Arctic climate and environmental research."***

From the government's strategy for the far north:

"Norway will be a leader in the environmental area, and a long-term and credible administrator of environmental and cultural assets in the far north. ***This requires us to take a leading role in monitoring climate, environmental toxins and the marine environment in the far north."***

The contribution of the Norwegian Mapping Authority and geodesy to understanding climate change

STATENS KARTVERK

POSISJONSDATA - TIL NYTTE FOR SAMFUNNET

Everything is in motion – all the time

- Earth

Everything is in motion – all the time

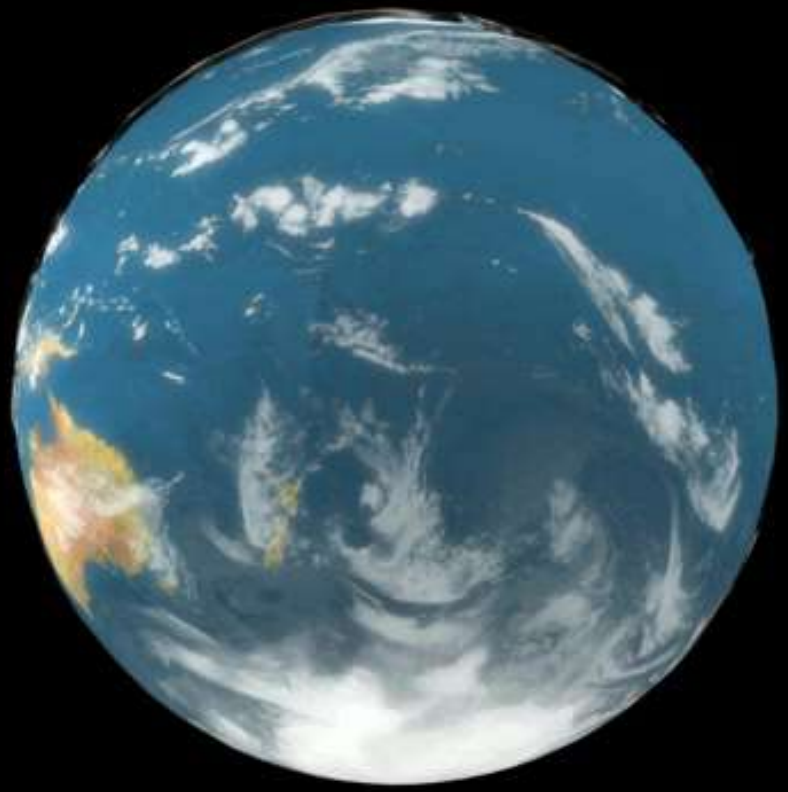
- Earth
- Continental drift

Everything is in motion – all the time

- Earth
- Continental drift
- Ocean currentts

Everything is in motion – all the time

- Earth
- Continental drift
- Ocean currentts
- The Earth’s rotation and position



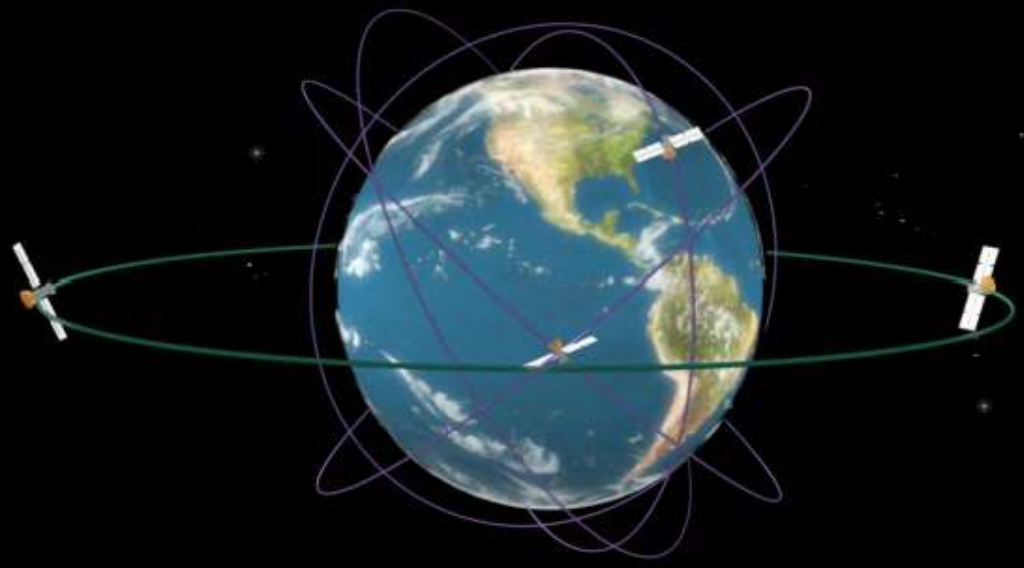
Geodesy's role

Measuring changes to and movements on the Earth (the rise of land masses, sea level variations, continental drift and so forth) depends on establishing a precise reference point.

Establishing a reference point for something which is in constant motion in several directions and at varying speeds is a demanding and complex exercise. Establishing and developing such a reference point is the role of geodesy.

How can knowledge be acquired and changes to/movements on the Earth be measured when nothing is stable?

A frame of reference must be established



What is a frame of reference?

- All measurements must be made from somewhere – a starting point must be established which is as stable as possible
- All geographical information is prepared on the basis of a frame of reference – and developing such frames is the main role of geodesy
- Use of satellites and measurements rooted in outer space represent the future way to establish frames of reference – with much greater precision than today's methods

What are frames of reference used for?

Frames of reference provide the basis for all geographical information:

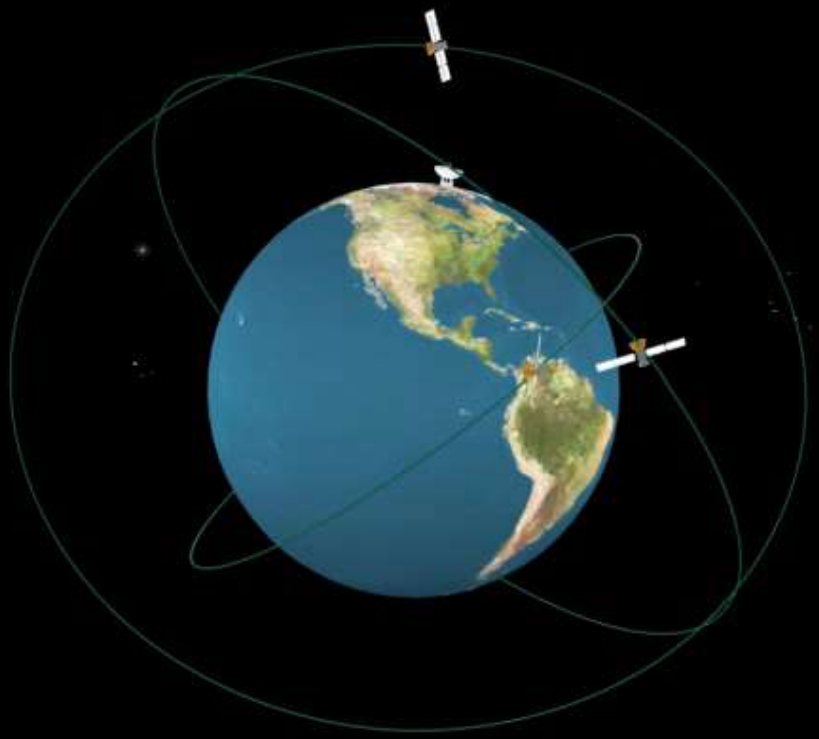
- maps
- positioning (GPS)
- Earth observations
- climate change

The better and more precise the frame of reference, the better and more accurate the geographical information

Monitoring changes on the Earth demands high precision over time (at the millimetre level)

Earth observations are made today from outer space

- Ice melting
- Movement of tectonic plates
- Sea-level changes
- Ocean currents
- Weather observations



VLBI – key method with unique precision

STATENS KARTVERK

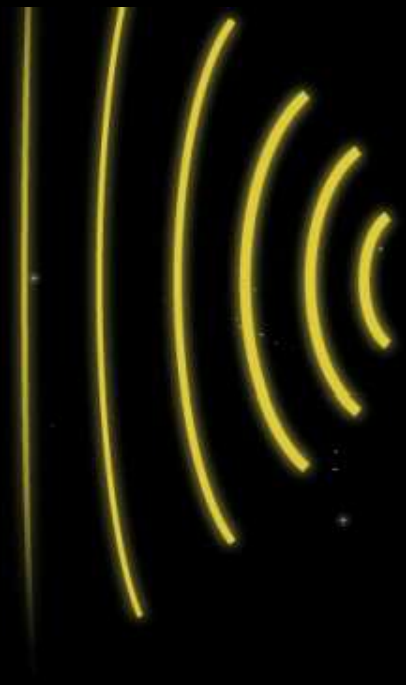
POSISJONSDATA - TIL NYTTE FOR SAMFUNNET

“Give me a firm spot on which to stand, and I will move the Earth”

Archimedes
(287-212 BC)

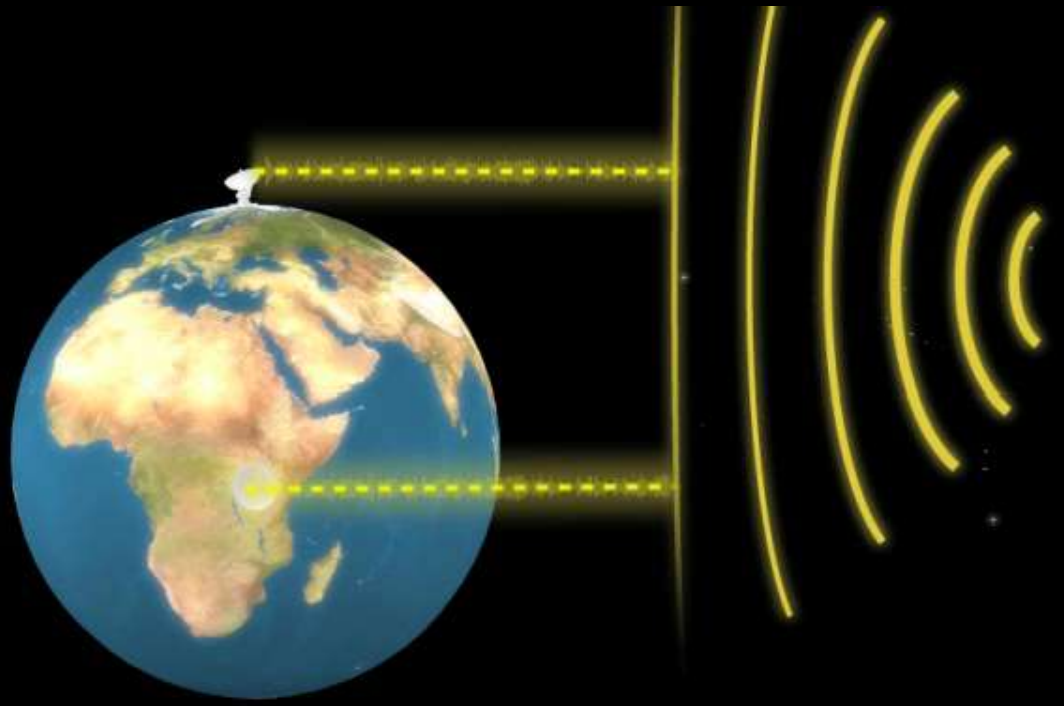
VLBI

- Quasars up to 13 billion light years away emit radio noise



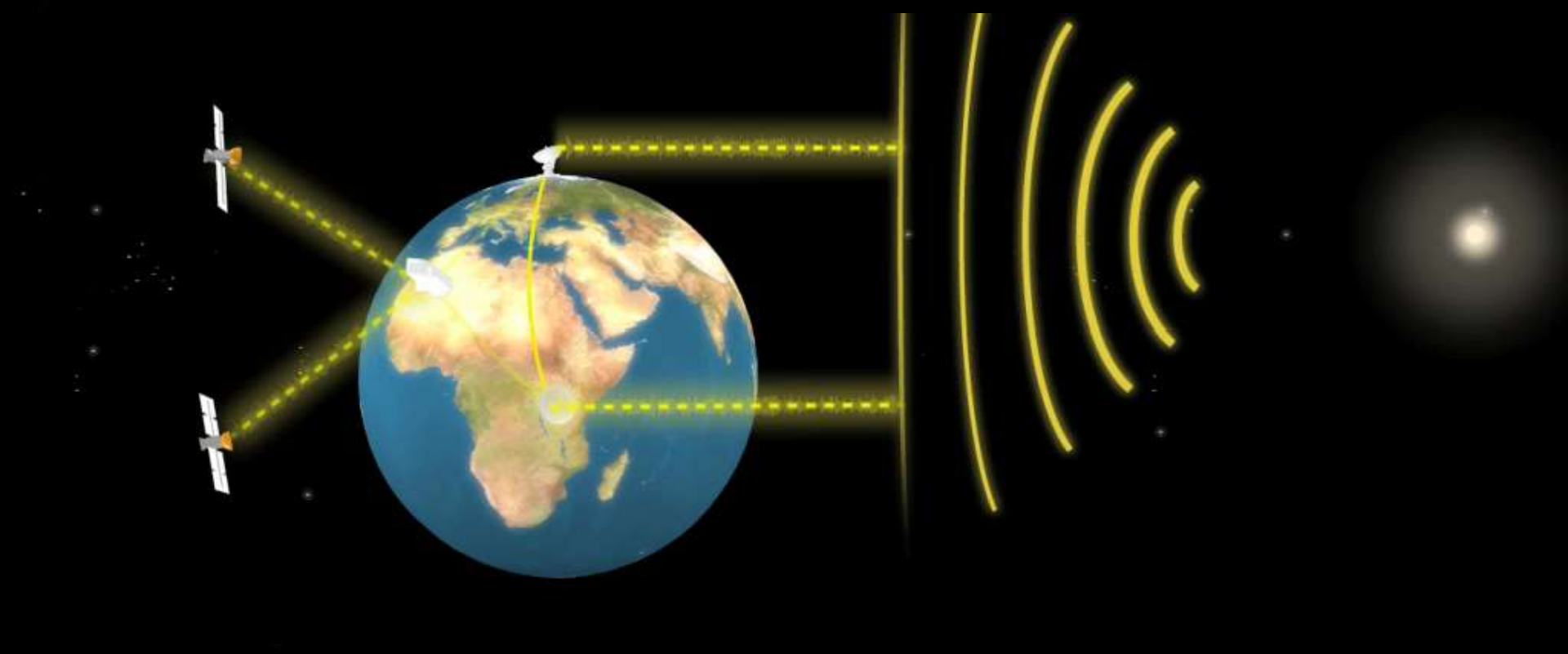
VLBI

- Quasars up to 13 billion light years away emit radio noise
- VLBI stations in a global network measure against the same quasars simultaneously



VLBI

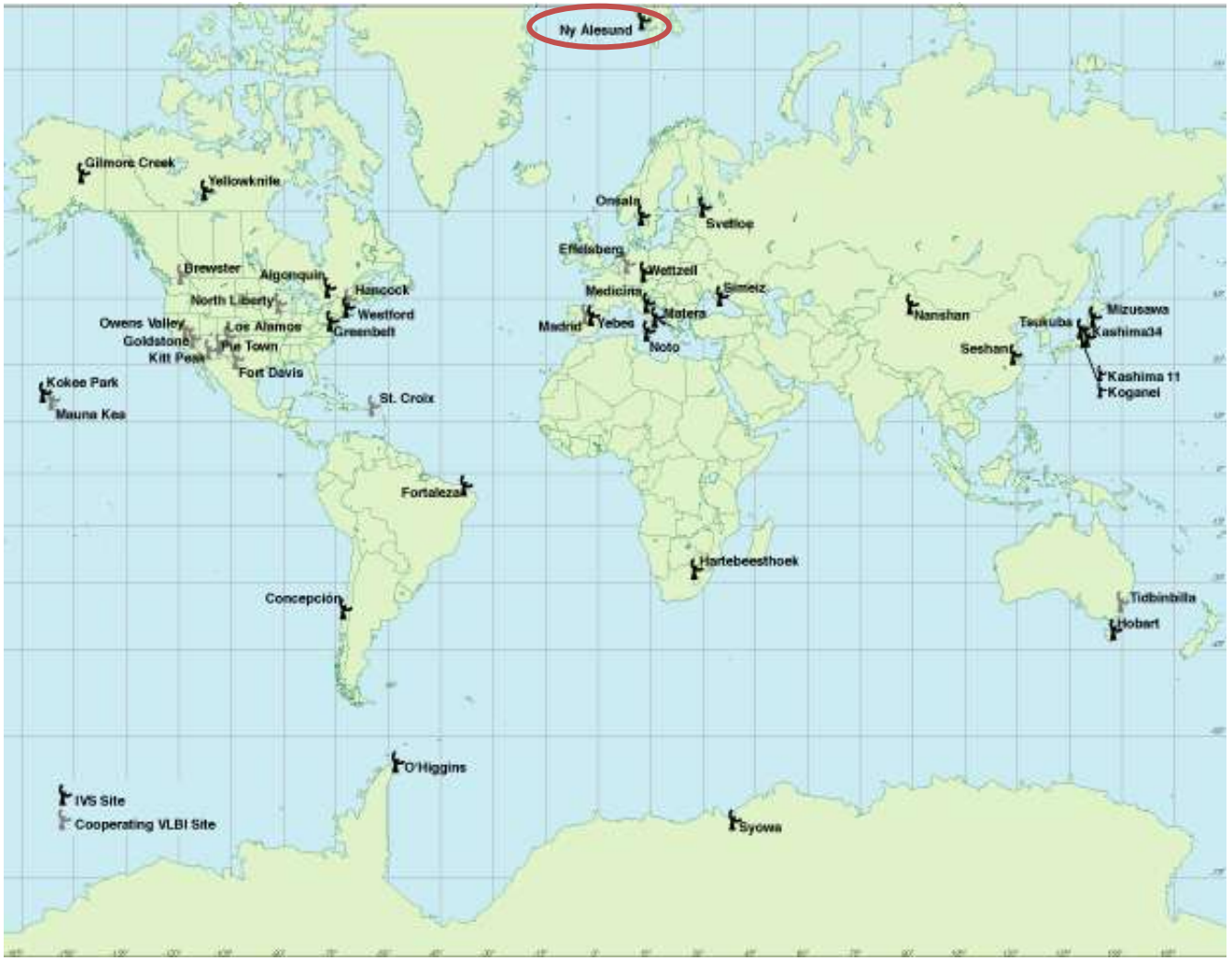
- Using accurate clocks and calculations, the exact distance between the stations can be established. As a result, measurements across the network can determine such aspects as the Earth’s rotation, the position of its axis in space, and continental drift
- This information is fundamental both for the accurate operation of GPS systems and for precise statements about climate changes



Ny-Ålesund plays a key role in this global collaboration

- A location on the edge of the high Arctic makes Ny-Ålesund a hub in the network and allows it to work simultaneously with stations in Europe, Asia and North America
- The radio silence in Ny-Ålesund minimises disruptive noise – and the observatory there serves as a reference point for other units
- A location in the far north in important – not least because the earliest and clearest effects of climate change are expected to be seen there

Ny-Ålesund with a key global role



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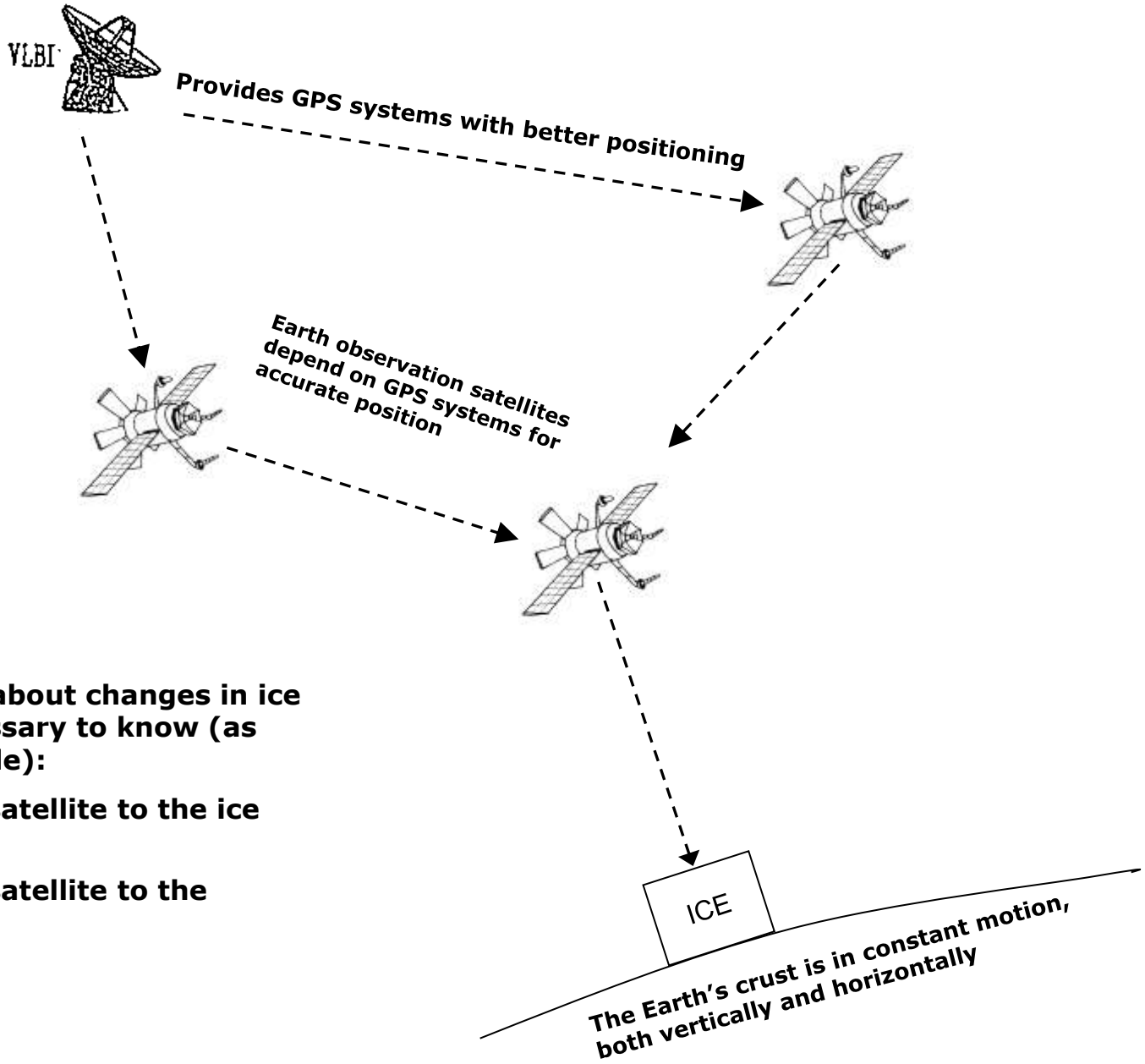
Why VLBI?

- Given that the Earth's crust is in constant motion, a stable reference point must be found in outer space
- GNSS (GPS, etc) satellites get out of position over time and need correcting
- Earth observation satellites depend on GNSS satellites for their exact position
- The VLBI network is crucial for achieving sufficient accuracy in other types of research, such as changes in sea level



To learn something about changes in ice thickness, it is necessary to know (as accurately as possible):

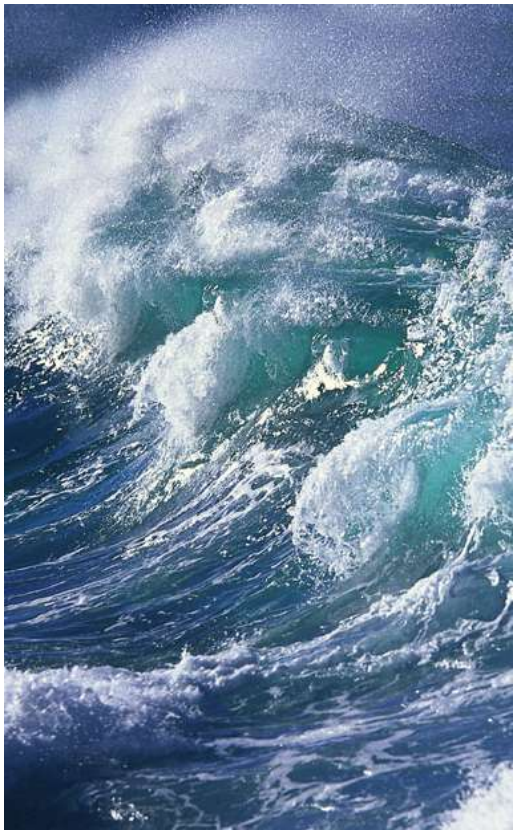
- **the distance from satellite to the ice surface**

- **the distance from satellite to the Earth's surface**

Key message to the decison-makers

An overall picture at global level is necessary for providing answers to the many complex processes involved in climate change

A modern geodetic observatory in Svalbard will allow Norway to make a unique contribution to monitoring these developments, in line with Norwegian government policy on the far north



A MESSAGE FROM KNUT JØRGEN RØED ØDEGAARD

- Be proactive – if you think something is interesting – put it out there
- Use simple words in own language – tell people this is important
- Keep it simple – the general public will not see the details – this info can be put elsewhere for the ones with special interests in the field

How we present ourselves today?

- **Geodesy, also named geodetics, a branch of earth sciences, is the scientific discipline that deals with measurement and representation of the Earth, including its gravitational field, in a three-dimensional time-varying space (Wikipedia)**

- **Geodesy is creating the bases for Earth observation and research (NMA)**

- **My challenge to you: tomorrow there will be a far better and understandable presentation of geodesy in in four Nordic languages**

Thank you for your attention

STATENS KARTVERK

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YES, VIRGINIA, THERE IS GLOBAL WARMING!
NORTH POLE
KEVINSTERS