

# Swedish National Space Agency

Vilgot Claesson

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SRS 2022



# Agenda

- SNSA programmes
- Horizon Europe
- ESA
  - Exploration Programme
  - Earth Observation
  - Science Programme

# Research Programme – 2021 results

Vilgot Claesson



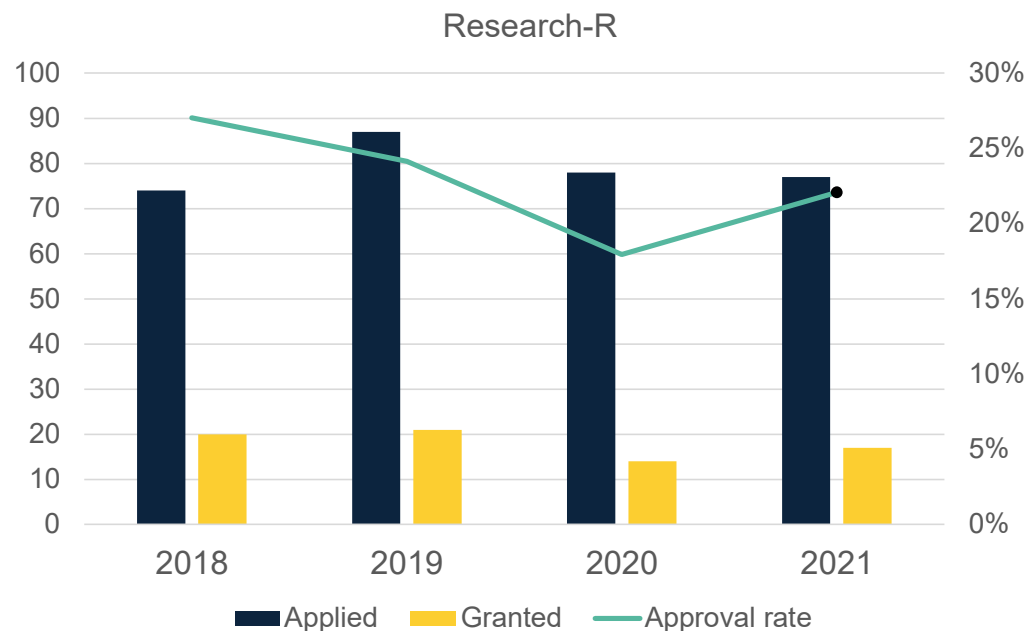
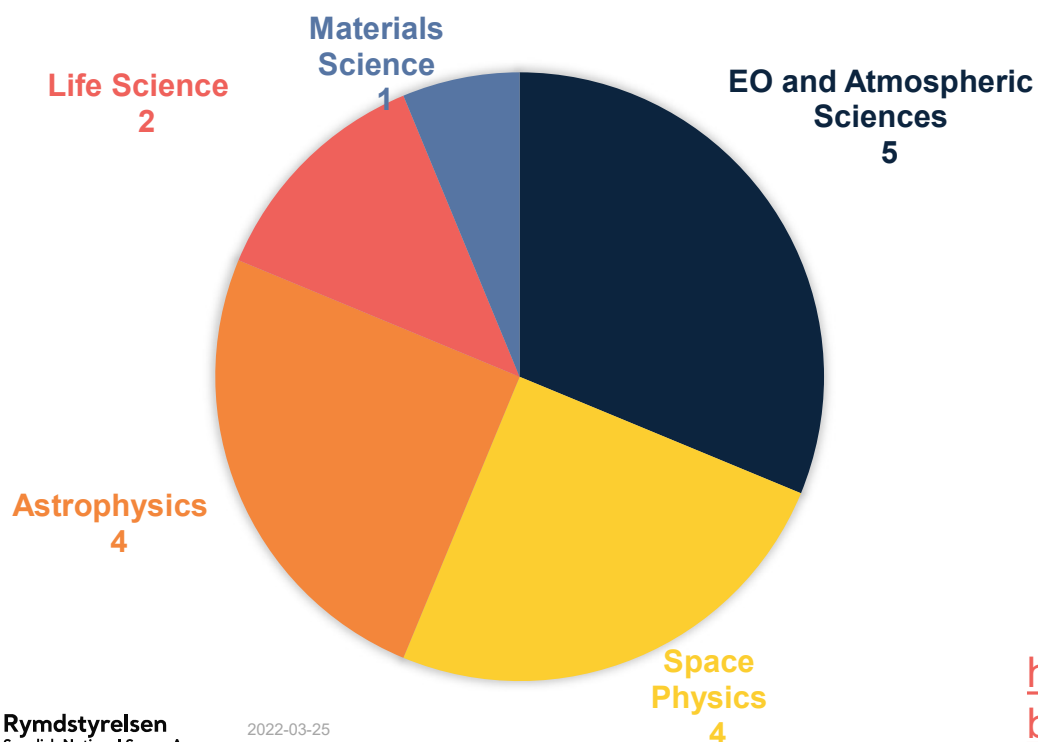
# 2021 calls

<b>Programme</b>	<b>Total</b>
<b>2021-N New contributions to international space missions</b>	<b>14 391</b>
<b>2021-C Career support</b>	<b>17 324</b>
<b>2021-R Research</b>	<b>65 455</b>
<b>Total (Mkr)</b>	<b>97 170</b>

**Note:** these calls are now open again. See [rymdstyrelsen.se](https://rymdstyrelsen.se)

# Call 2021-R – Research

77 proposals in total and 17 proposals granted. Success rate 22 %



<https://www.rymdstyrelsen.se/forskning/beviljade-bidrag/utlysning-2021-r/>

# Career support 2021-C

- 21 proposals
- 5 granted
- **Success rate 24 %**

Career support	2018	2019	2020	2021	Tot.
<b>Proposals</b>	18	10	12	21	61
<b>Granted</b>	5	2	4	5	16
<b>Approval rate</b>	28%	20%	33%	24%	26%

<https://www.rymdstyrelsen.se/forskning/beviljade-bidrag/utlysning-2021-c/>

# New contributions to international space missions (2021-N)

- 5 proposals.
- Fermi Gamma-ray Space Telescope, KTH
  - 2,2 MSEK – 4 years
- Jupiter Icy Moon Explorer JUICE, IRF
  - Radio & Plasma Wave Investigation (RPWI)
  - 12,2 MSEK 4 years

# Grant Reporting in Prisma

- To be done for all Prisma managed projects:
  - Financial reporting once per year
  - Scientific reporting – end of project.
- For more information se:
- <https://prismasupport.research.se/user-manual/researcher/applications-and-grants/grant---reporting.html>



# Open Calls in 2022

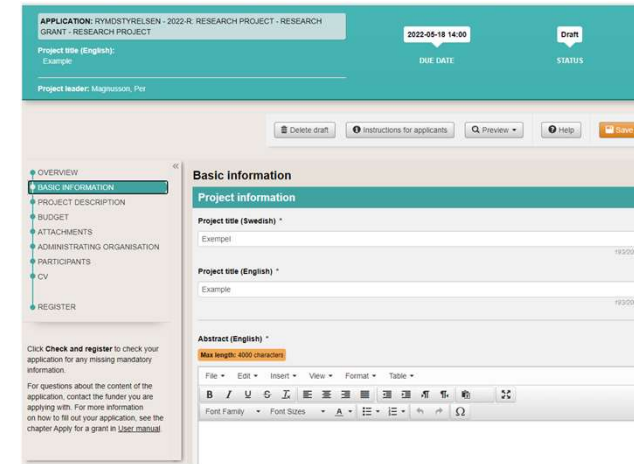
## SNSA calls open in PRISMA to all researchers:

- **Call 2022-N**, Research Infrastructure in space, Release: Deadline: April 20, 14:00
- **Call 2022-C**, Career support 2-6 yrs, Deadline: May 11, 14:00
- **Call 2022-R**, Research projects 1-4 yrs, PhD positions 4 yrs, Deadline: May 18, 14:00

In addition, SNSA has targeted calls for additional grant phases for support started in previous years.

## NEWS:

- If you have **cost increases** within a project where SNSA has entered into an international agreement, then contact SNSA no later than **March 31** (you can't use any of the open calls above).
- We now open for the possibility to seek **4-year support** within **R calls** (does not require PhD position in the project). However, the number of such grants will be limited. It can be a **mistake** to apply for 4 years if your project does not justify it.



The screenshot displays the PRISMA application interface. At the top, it shows the application title 'APPLICATION: RYMDSTYRELSEN - 2022-R. RESEARCH PROJECT - RESEARCH GRANT - RESEARCH PROJECT' and the due date '2022-05-18 14:00'. The status is 'Draft'. The project title is 'Example' and the project leader is 'Magnusson, Per'. The interface includes a navigation menu on the left with options like 'OVERVIEW', 'BASIC INFORMATION', 'PROJECT DESCRIPTION', 'BUDGET', 'ATTACHMENTS', 'ADMINISTRATING ORGANISATION', 'PARTICIPANTS', 'CV', and 'REGISTER'. The main content area is titled 'Basic information' and contains fields for 'Project title (Swedish)', 'Project title (English)', and 'Abstract (English)'. The abstract field has a 'Max length: 4000 characters' warning and a rich text editor below it.

# SNSA Preparations for ESA/CM22

ESA is planning a **Council Meeting at Ministerial Level** on 2022 Nov. 22–23.

This will determine **funding** for ESA programmes in the next 3–5 years.



SNSA held a consultation with Swedish stakeholders on February 22. Bilateral meetings will be held in the next few months, both with Swedish industry and with ESA directorates.

Presentations are available at the SNSA web page.



- Intergovernmental organisation
- 22 member states
- Internal costs: ~15%
- Guaranteed georeturn

**Mandatory programmes:**

- Based on GNP: ~900 M€/year
- Sweden: 2.71% = ~23 M€/year

**Optional programmes:**

- ~4 000 M€/år
- Sweden = ~75 M€/år

**Total budget:**

- ~6 700 M€/year



# Balloon and rocket programmes

Kristine Dannenberg



**Rymdstyrelsen**  
Swedish National Space Agency



# Swedish national balloon and rocket programme

- Established in 2012 with a specific budget allocation (currently 20 MSEK/year)
- Objective: offer scientists balloon and rocket flights from Esrange for high quality research
- Calls for proposals issued on regular basis
- Last call in 2020



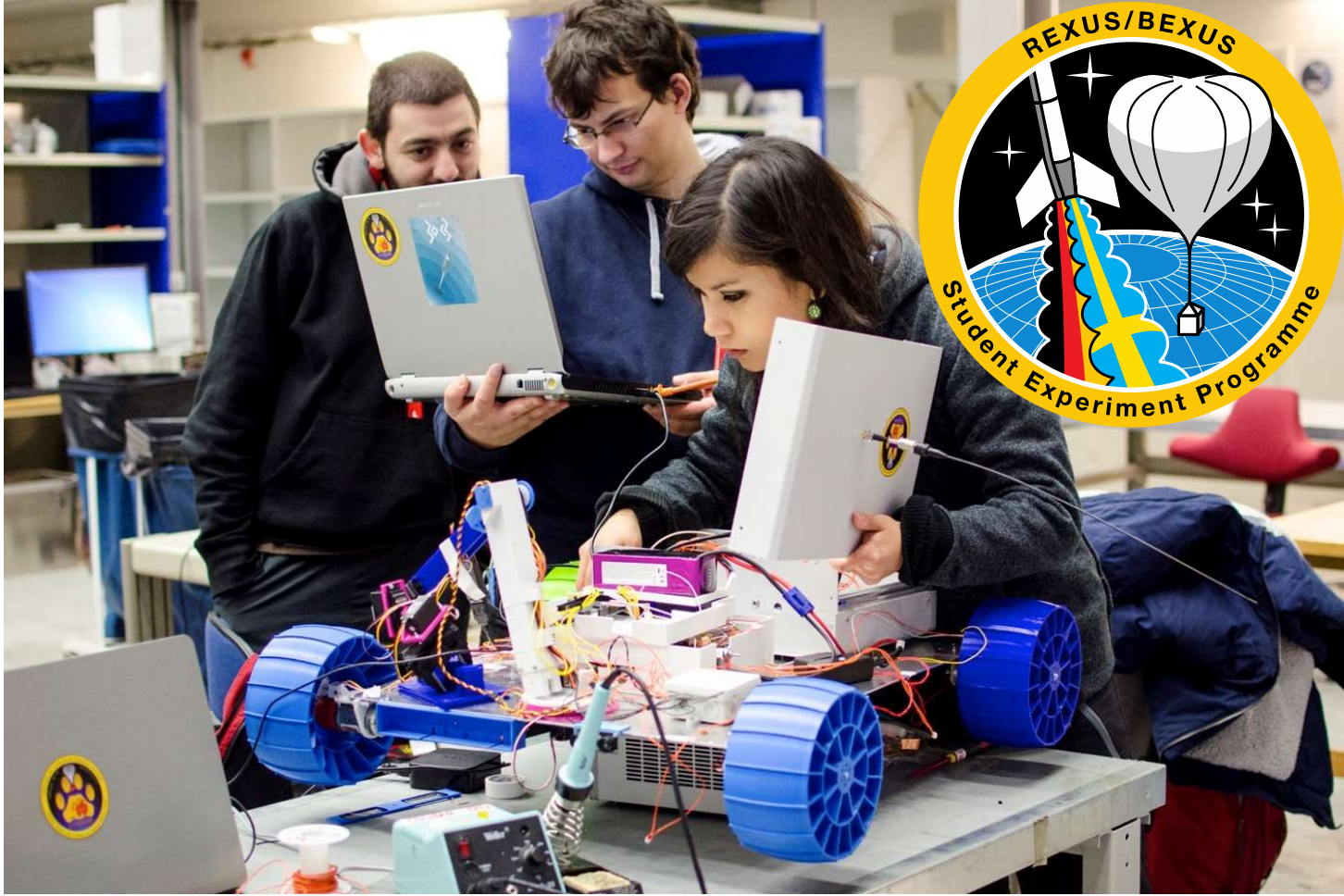
# Status and plans

- One rocket project (BROR) and one balloon project (in-Situ Cirrus) ongoing
- Assessment of two rocket projects Syster and Origin ongoing
- Pandemic, fire and political situation has an impact on launching schedules from Esrange
- Next Call in 2023/2024 (tbc)



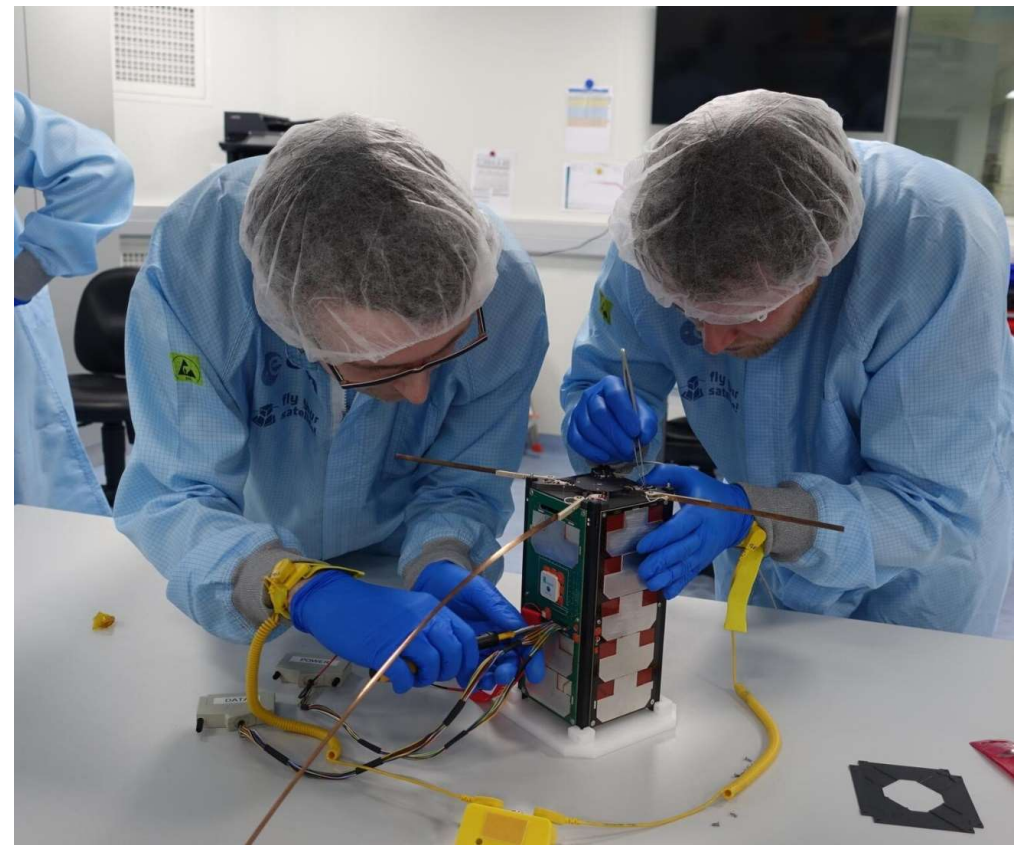


# German-Swedish programme REXUS/BEXUS in collaboration with ESA



# Future Swedish student satellite programme?

- A pilot assessment initiated at SNSA
- Preliminary idea – up to 3 unit CubeSats launched from Esrange
- Questionnaire to community under preparation
- Any inputs welcome



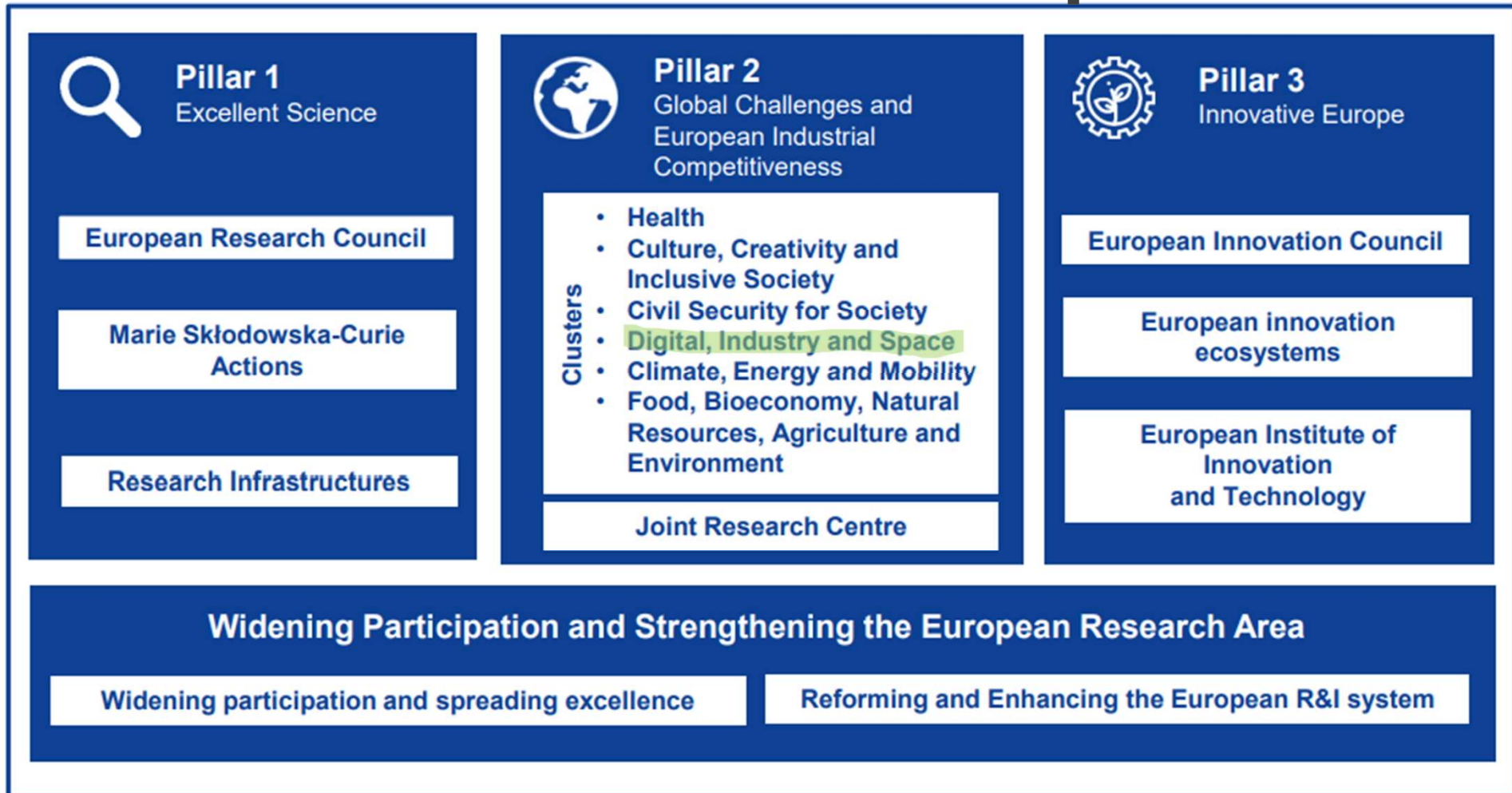


# Space in Horizon Europe



**Rymdstyrelsen**  
Swedish National Space Agency

# Structure for Horizon Europe



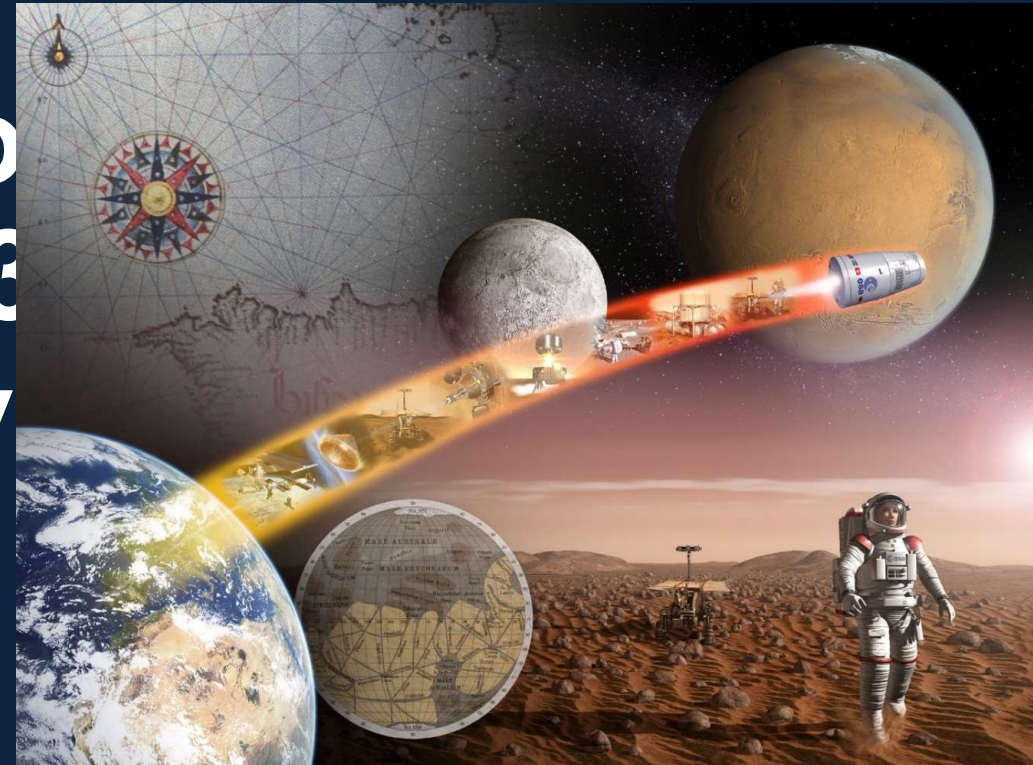
# Space – Destination 5 in the Cluster 4 ”Digital, industry and space”

- Destination 5 defined as ‘Open Strategic autonomy in developing, deploying and using global space-based infrastructures, services, applications and data’
- Budget for the space calls 2021-2022 ~497 M€
- Focus on infrastructure, technology development, services and applications

# Preparation of the Work Programme 2023-2024

- Proposal from the commission under discussion in the Programme Committee – SE delegates from relevant ministries, experts from Vinnova and SNSA
- Swedish “referensgrupp” for Space with representatives from various players established – more people welcome
- Usually quite short time for comments before the committee meetings, with a possibility to provide written comments later

# ESA Exploration Programme, ESA aka Terrae Nova





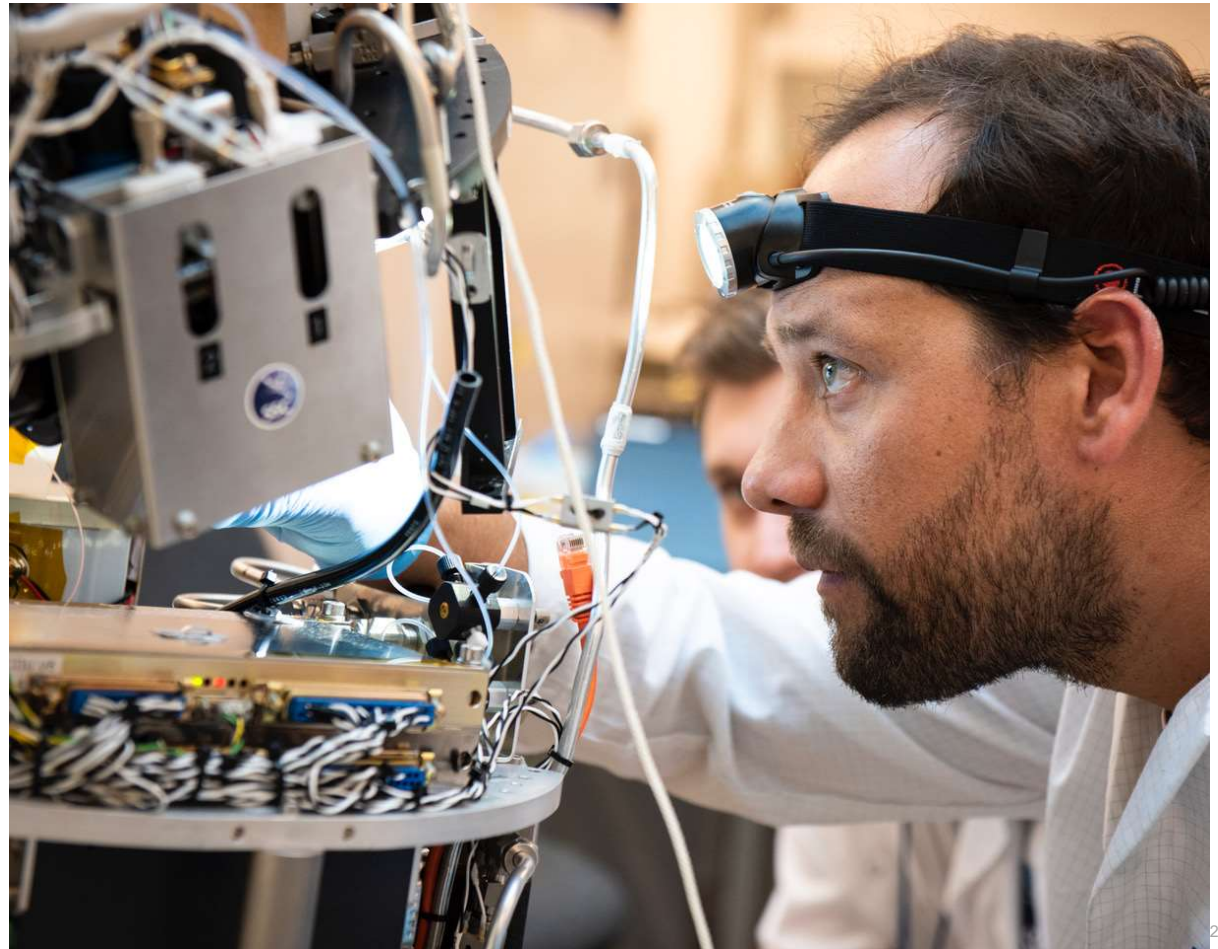
# Current status of ESA exploration activities

- ESA-Roscosmos project ExoMars currently suspended
- ISS cooperation ongoing
- ESA Astronaut selection ongoing – 18 Swedish candidates to phase 2 (out of 1361)
- Swedish NILS instrument considered for Chinese Chang´e 6



# Microgravity laboratory on rockets - SubOrbital Express

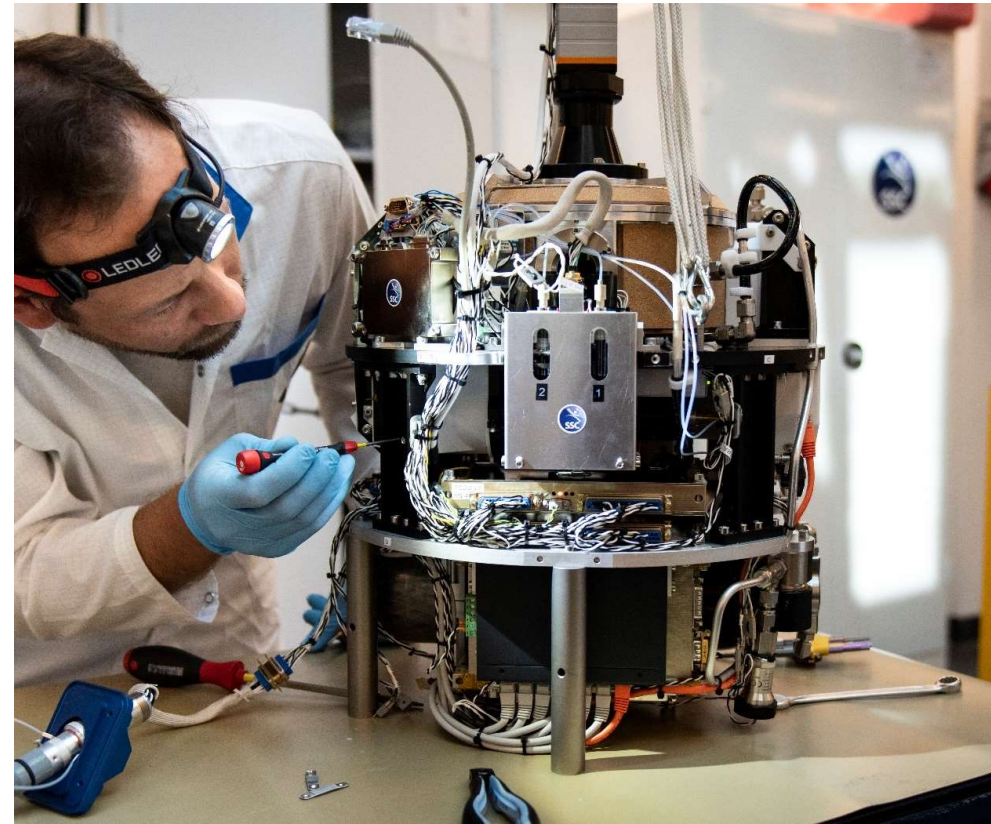
- Around 6 min. of microgravity
- Modules developed by SSC and/or customers
- Launches from Esrange
- Opportunities within ESA – call for new proposals open until April 11th 2022





# Three Swedish sounding rocket experiments selected in the last Call

- Two within life-sciences, from KI and UU
- One within material sciences from Karlstad University
- The experiment modules under development by SSC





# Terra Novae (E3P) – ESA exploration programme

- Four main areas

Human exploration in LEO - 970 M€

Human exploration beyond LEO- 460 M€

Lunar robotic exploration - 390 M€

Mars Exploration - 850 M€

- Two "horizontal areas"

Science in space, SciSpacE - 200 M€

Technology development, ExPeRT - 80 M€



# Earth Observation

**Vilgot Claesson**

SRS 2022

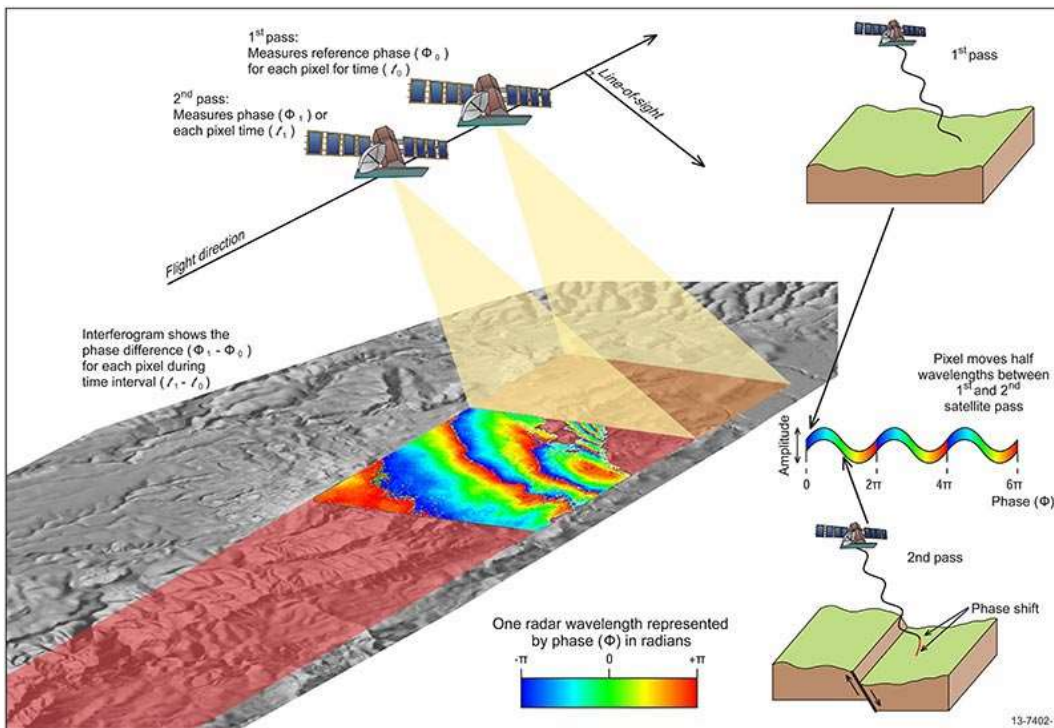




- Collaboration between AI Sweden, SNSA, RISE, and LTU.
- Increased use of Copernicus/Satellite data for the benefit of society.
- Pilot projects:
  - Vänern's shoreline
  - Mälardalen's heat and drought.
- More information: [spacedatalab.se](https://spacedatalab.se)



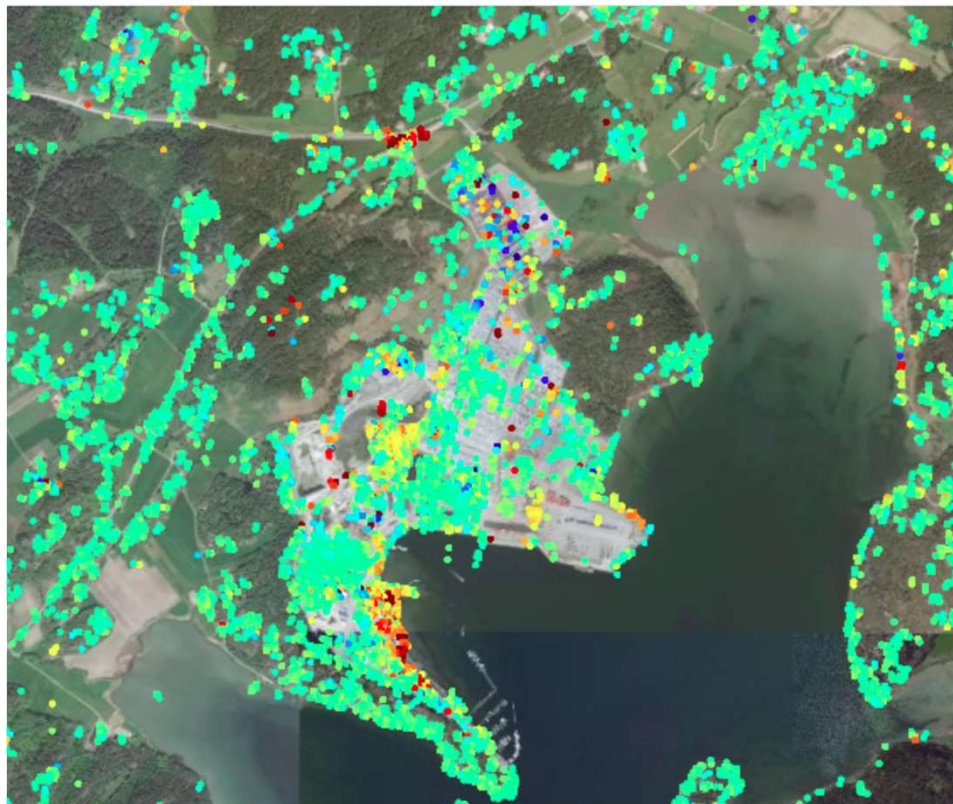
# Ground movements with InSAR



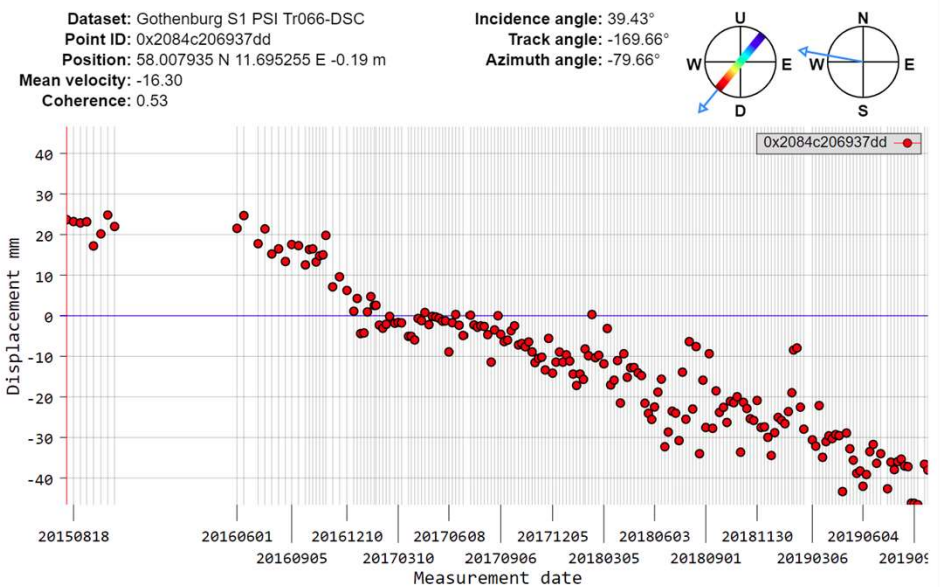
- Available as an open service <https://insar.rymdstyrelsen.se/>
- Measures the phase difference between different passages.
- Coming as Copernicus service
- Can be of great benefit in Sweden. E.g. Swedish Transport Administration



# Tjörn harbour area



- Areas with elevation and setting are made visible



# ESA - Earth Observation

Lays the foundation for innovative space technology, implements innovative satellite projects and delivers high-quality science.

Works for European independence and creates opportunities for a commercial space sector.

© ESA



# New Director of ESA Earth Observation

- Ms. Simonetta Cheli
- Previously Head of the Strategy, Programme and Coordination Office (EO)
- Started January, 2022.  
Replaced Toni Tolker Nielsen (acting).



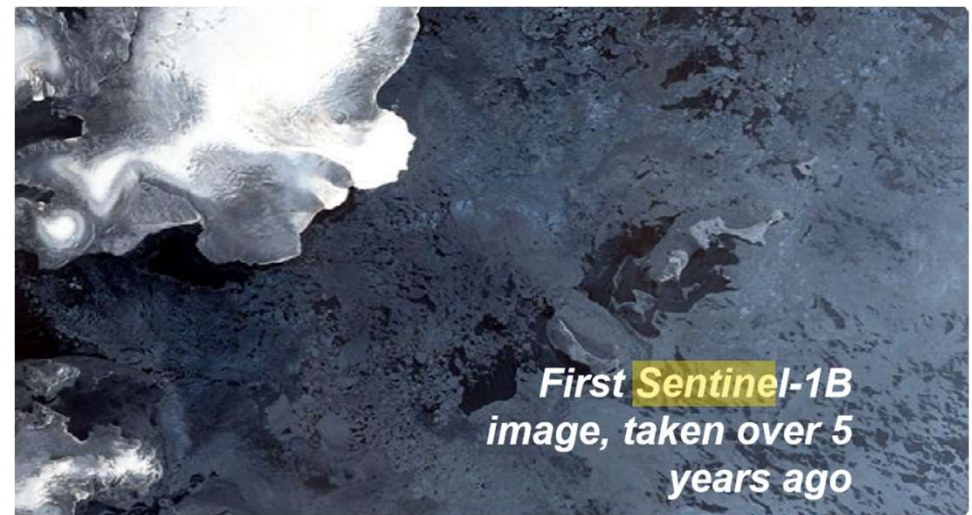
# ESA – EU Contribution Agreement

- Funding problems with Copernicus Space Component
- Funding Gate Milestone (FGM) - (UK – June 2024)
- Action plan until then - limited effects on Copernicus expansion missions
- 730 million euro



# SENTINEL-1B Anomaly

- Sentinel-1B is unavailable since 23 December 2021 at 06:53 UTC and no data are being generated.
- Investigations into the anomaly are ongoing.
- To support user requirements, agreements with Canada and other radar data providers are jointly organised with the EC.
- A potential anticipation of Sentinel-1C launch is also under investigation.





# living planet symposium

**BONN**  
23–27 May  
**2022**

**TAKING THE PULSE  
OF OUR PLANET  
FROM SPACE**

Status Summary by Stefano Ferretti and Albrecht Schmidt,  
Co-Chairs, on behalf of the LPS 22 Team  
DOSTAG109 27/28 October 2021





WorldCover



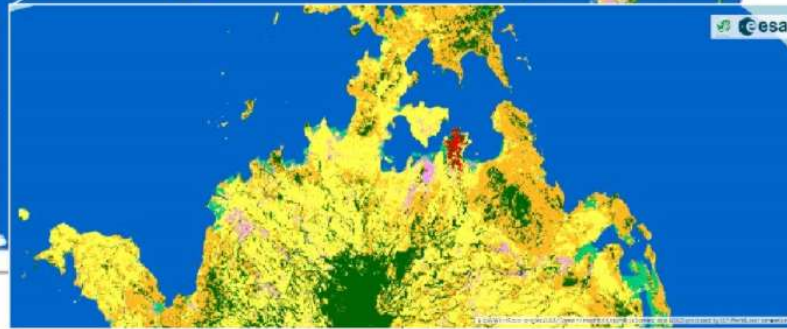
# WorldCover

→ a freely accessible global land cover product at 10 m resolution for 2020, based on Sentinel-1 and Sentinel-2 data

- ✓ Released on 20<sup>th</sup> October 2021
- ✓ **11 classes**, ≈74% overall accuracy
- ✓ Independent data validation, highly robust for phenology, Copernicus DEM used as auxiliary data
- ✓ **Part of ESA EOEP-5** (Block 4 – EO Science for Society)

<https://esa-worldcover.org/>

- Tree cover
- Shrubland
- Grassland
- Cropland
- Built-up
- Bare/sparse vegetation
- Snow and ice
- Permanent water bodies
- Herbaceous wetland
- Mangroves
- Moss and lichen



© ESA WorldCover project 2020  
© Contains modified Copernicus Sentinel data (2020), processed by ESA WorldCover consortium



→ THE EUROPEAN SPACE AGENCY

# ESA Science Programme

Mandatory programme within ESA

SRS, 2022 March 24



# Cosmic Vision – Voyage 2050

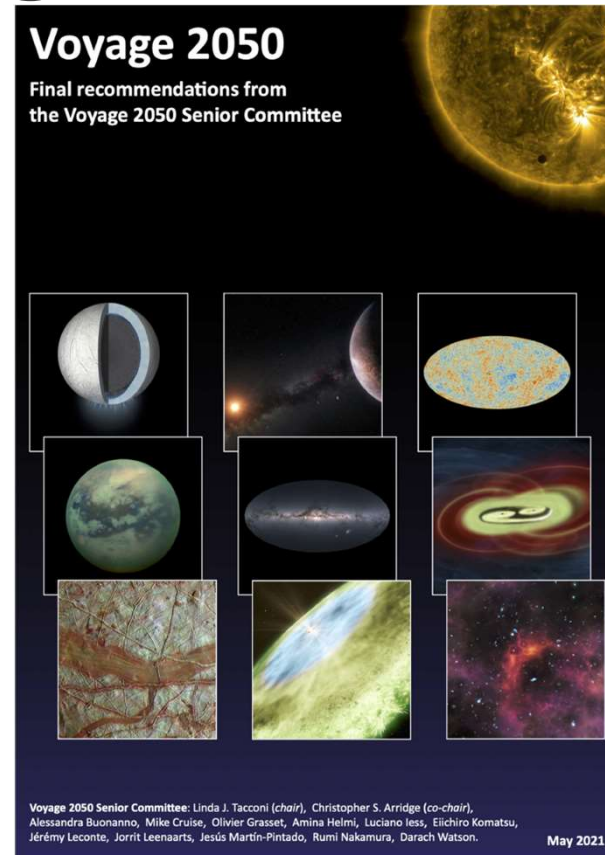
## Large missions (>1G€):

### Cosmic Vision – 2020–2035

- **L1, Juice**, Jupiter Icy Moons Explorer, Launch 2023
- **L2, Athena**, X-ray observatory, Launch 2028
- **L3, Lisa**, Gravitational wave observatory, Launch 2034

### Voyage 2050 – Launches 2035–2050

- **L4, Moons of the Giant Planets**
- **L5, From Temperate Exoplanets to the Milky Way**
- **L6, New Physical Probes of the Early Universe**



*Recommendations by the Voyage 2050 Senior Committee, May 2021*

# CM22 and the Long-term Plan

Currently **proposed budget increases** for the Science Programme at **CM22**:

**+8%, +5%, +5%** in the next 3 years (inflation will eat away from these increases)

**Inspirator** proposed by the DG:

- **Sample return from Enceladus** (2.5 G€, requiring budget increases also at CM25)
- **Criticized** at SPC as a **top-down** proposal, foreign to the Science Programme

**Long-term Plan** of the Science programme:

- Two draft versions by the ESA executive are in circulation
- June 9: **SPC Workshop** to discuss **scenarios** for various outcomes at CM22
- November: **CM22** will determine the **Level of Resources** for the Science programme
- March 2023: **SPC decision** on the **Long-term Plan**

# International Collaboration

between the ESA Science Programme and international partners

Success with **JWST** !

More difficult times ahead:

- **Russia** ...
- Collaboration with **China** has been very difficult during the pandemic
- LiteBIRD and Small JASMINE considered with **JAXA**
- Involvement in **US** PI-led missions more difficult than foreseen
- The executive will discuss DYNAMIC and GDC with NASA





# Mission Extensions – Uncertain situation

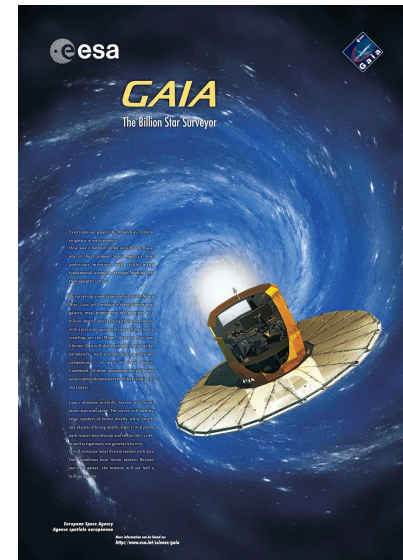
## Cluster, Integral, Mars Express

- **Decided** operations until **December 2022**
- Operations **likely** to be extended to **March 2023**
- Further operations **dependent** on funding at **CM22**
- **SPC** decision in **February–March 2023**



## Other science missions

- Transition to **3-year** cadence of mission extensions
- Operations likely to continue in **2023–2025**
- A new **MLA** is planned for **Gaia** – uncertain scope and consequences





# ESA Support to National Contributions

**ESA Science missions depend heavily on hardware, software, etc. provided by member states. Failure to deliver on time is a big financial risk to the ESA Science Programme.**

**New approach** (starting with M7,F2):

- Overall ESA management of large payload elements
- Early interaction with member states, before selection of candidates
- Design to cost philosophy for L missions
- ESA support to payload activities in the preparation phase
- Involve member states in ESA reviews
- ESA conditions on adequate national funding

The above approach may require more staff engagement from SNSA and may influence how we support Swedish contributions to ESA Science missions.

# M7 and F2

**Phase 1** deadline on February 14. Proposals received by ESA:

- **18** candidates for **F2**
- **26** candidates for **M7**

**Phase 2** deadline on July 15.

- All feasible candidates will be invited by ESA to submit.

**Letters of Endorsements** due on September 15 concerning national funding. If you believe ESA needs a letter from SNSA for your proposed involvement:

- **Contact SNSA** soon for instructions (we have a deadline for the national case in May)

**Selection of missions for study:** 2022 November