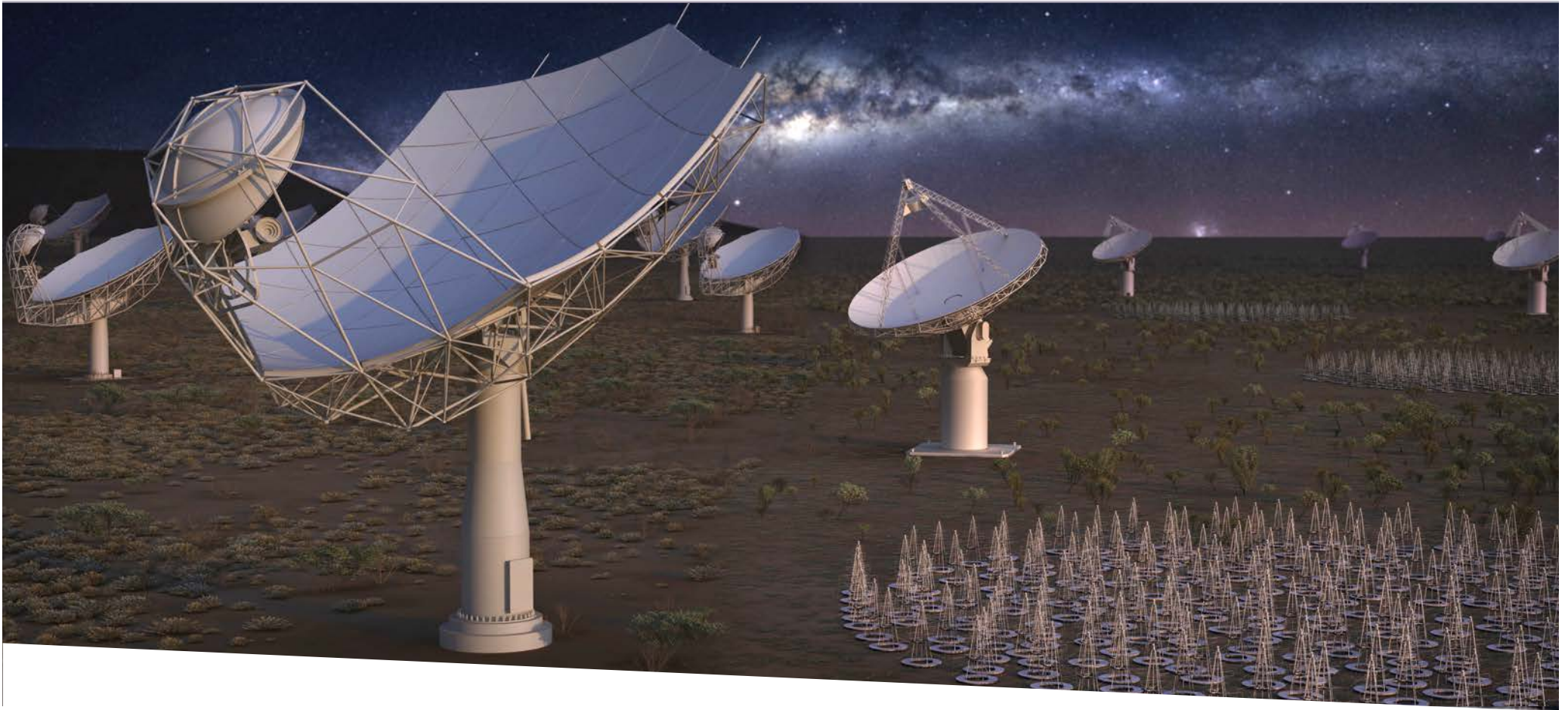


# SKA SWG Update



**SQUARE KILOMETRE ARRAY**

Exploring the Universe with the world's largest radio telescope

**Robert Braun, Science Director**

15 Dec 2020

# Science Activity Updates

- SKA IGO ratification/First Council Meeting (Robert)
  - Five ratifications complete as of 15 Dec. (NL, AU, ZA, IT, PT)
  - Anticipate UK announcement on 16 December
  - Planned First Council meeting late January 2021
- Next Science Meeting (Anna)
- Next Science Data Challenge (SDC2) (Philippa)
- General access to SWG-specific talks/meeting (Robert)
- AOB

# SKA Science 2021

- 15-19 March 2021, virtual event
- Using the OnAir platform
- Plenary talks:
  - Abstract submission to open through the OnAir platform **this week**, deadline for abstract submission **20<sup>th</sup> January**
  - Plenary talks pre-recorded, with live Q&A sessions, repeated in different time zones
- Splinter meetings
  - Organised independently by the SWGs
  - Live talks/ discussions, time zones set based on SWG geographical spread
- Poster sessions
  - We are exploring solutions for an effective virtual poster session experience



## Abstract Submission

This page will take you through the process of submitting your abstract. Each of the tabs on the left hand side of the page will bring up a submission process that needs to be completed. At any time in the process you can click the Save As Draft button to save your incomplete submission and return to it at a later time. The Review section will give you an overview of the sections that are still required to be completed. Once all required sections have been completed, you can submit your abstract in the Submit section of this page.

✕ Title and Presentation Type

Themes and Keywords

✕ Authors And Affiliations

Abstract Upload

AV Requirements

### Themes

Choose a theme for your abstract from the list below

Theme

### Keywords

Choose one or more keywords appropriate to your abstract

### List of categories

- Cosmology
- Cradle of Life
- Epoch of reionization/ Cosmic Dawn
- Extragalactic Continuum
- Extragalactic spectral line
- Gravitational waves
- High energy cosmic particles
- Hi galaxy science
- Magnetism
- Our Galaxy
- Pulsars
- Solar, Heliospheric & Ionospheric physics
- Transients
- VLBI
- Instrumentation
- Data analysis

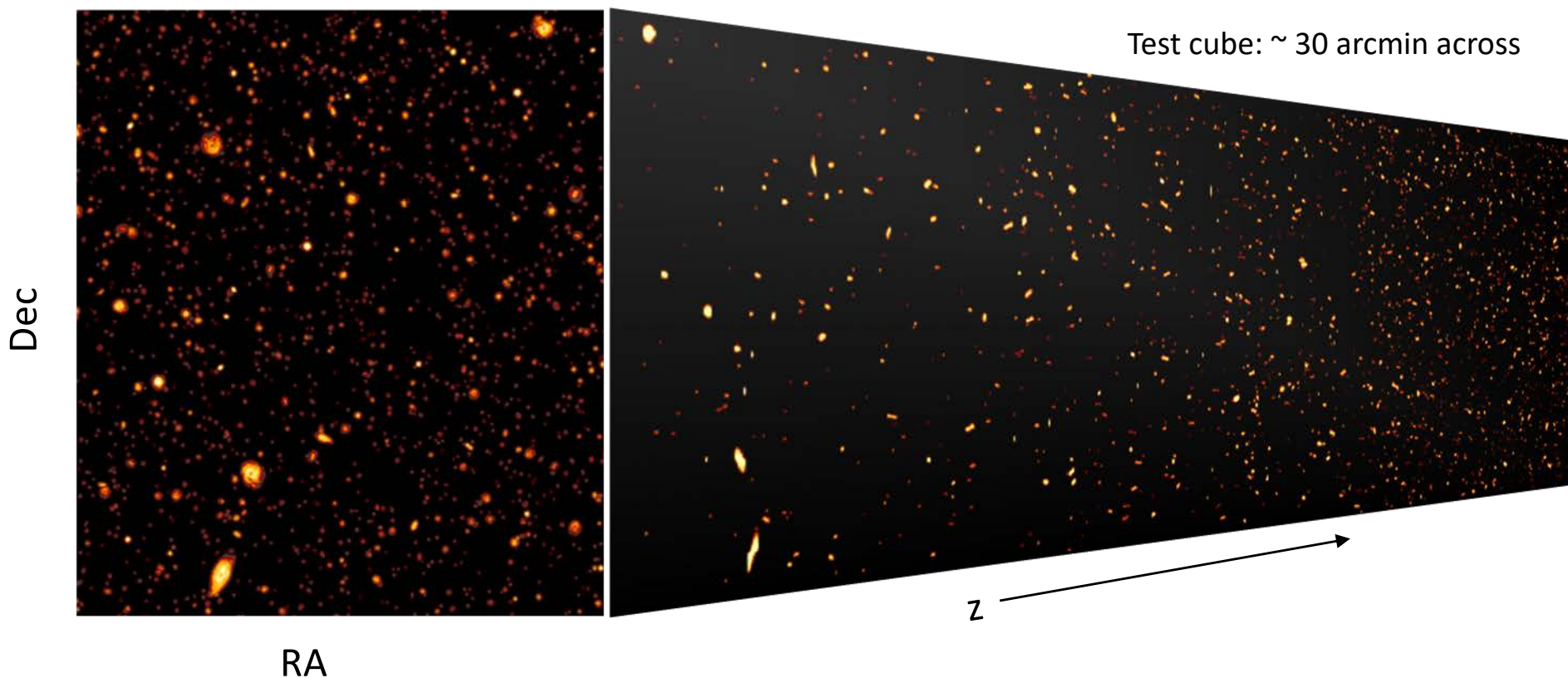
A comprehensive list of keywords can be used to better identify the type of content



# SDC2 timeline

- October 31<sup>st</sup>: Close the expressions of interest call
- Mid November: Open challenge registration  
Pair teams and resources  
Test dataset transfer and scoring code
- December: Validation cube available
- **January 15<sup>th</sup>: Challenge processing begins**
- July 15<sup>th</sup>: Challenge ends  
Winners announced  
Feedback sought from participants  
Feedback sought from facilities

# • (Fairly) big data



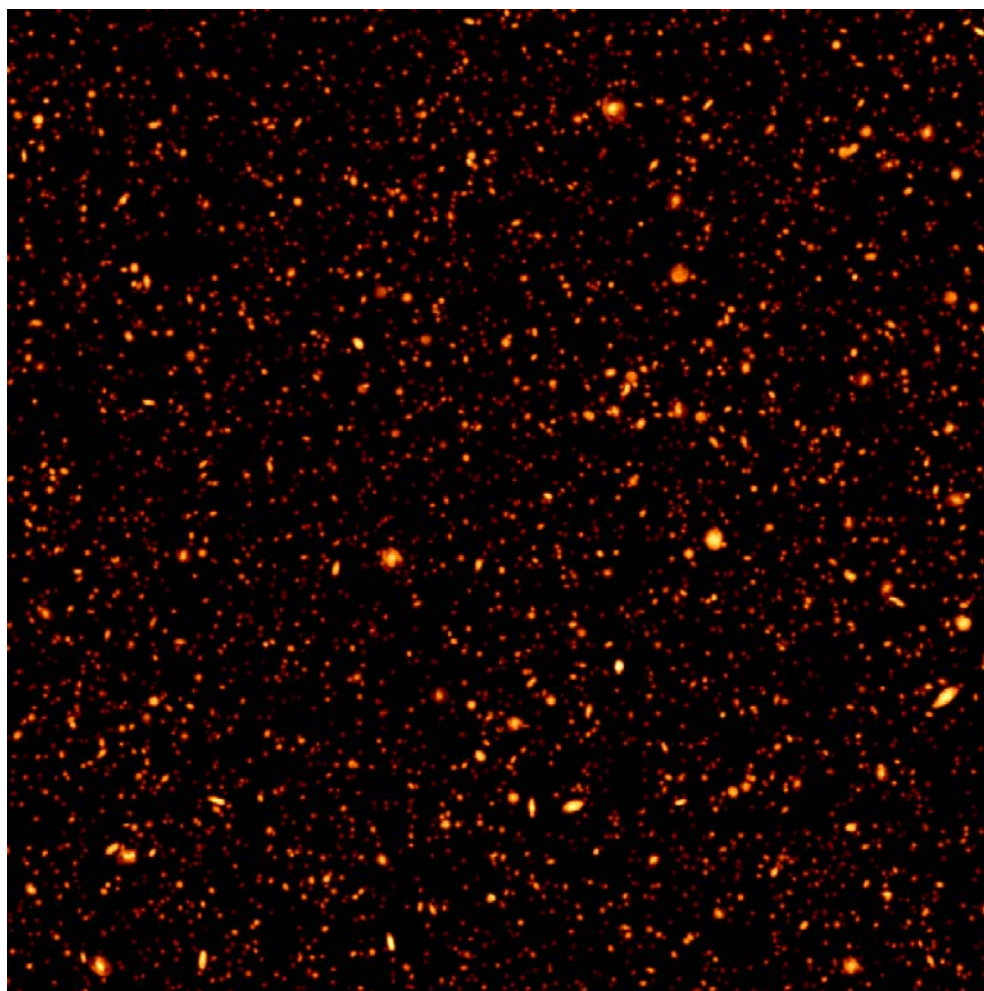
Integration time = 2000h  
 Spatial resolution = 7 arcsec  
 Frequency resolution = 30 kHz  
 RMS per channel 13-18  $\mu$ Jy

FoV = 20 square degrees  
 Frequency = 950 MHz – 1150 MHz ( $z = 0.25$  to  $0.5$ )  
 Data volume = 1 TB

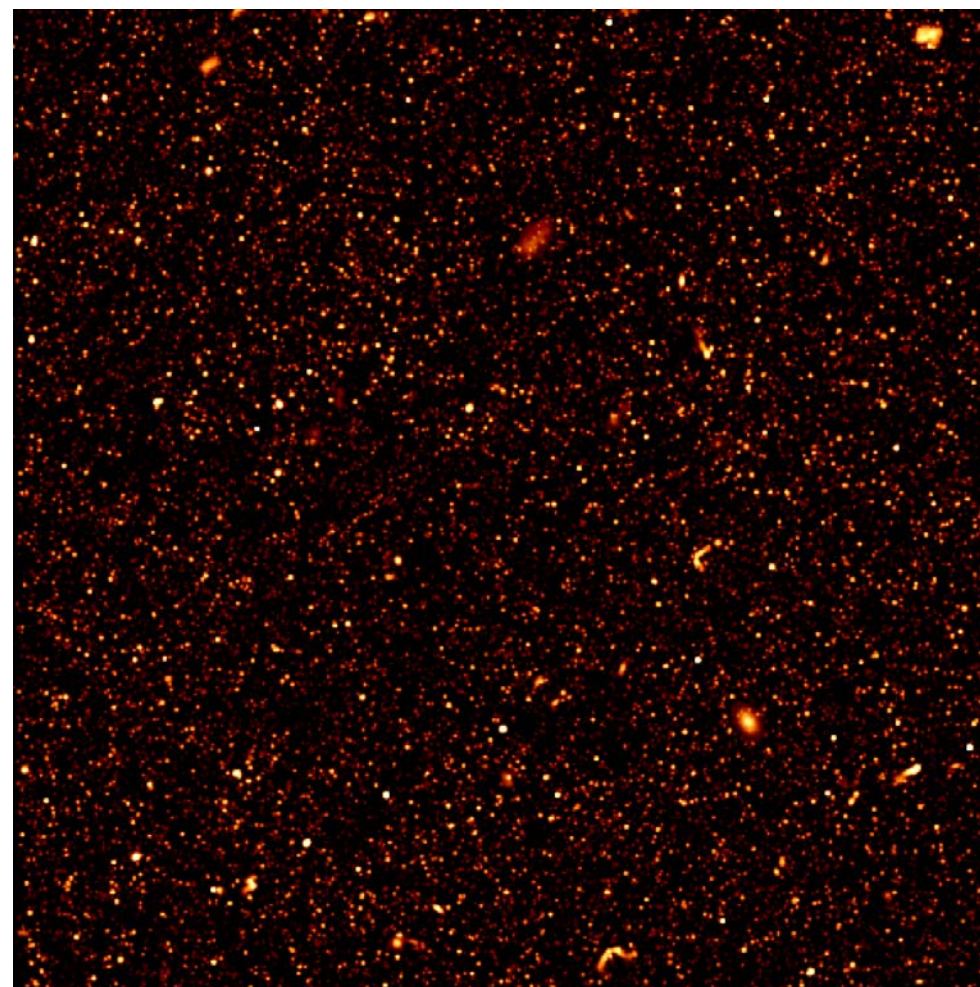


# Telescope simulation

Add noise, partially dirty beam and imperfect continuum subtraction (MIRIAD)



SKA MID band 2 spectral line observation



SKA MID continuum 1200 MHz

# Registration now open



[sdc2.astronomers.skatelescope.org/sdc2-challenge](https://sdc2.astronomers.skatelescope.org/sdc2-challenge)



SDC2 Challenge ▾ · Computational resources ▾ · **Challenge registration** · Discussion forum · About the Challenges

## Challenge registration

### Team details

Please provide your team name \*

Please provide the names and emails of each team member \*

Name	Institution	Country	email	Team leader
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="checkbox"/>
<input data-bbox="542 1428 604 1461" type="button" value="+"/>				



# Challenge and data description



Available at <https://sdc2.astronomers.skatelescope.org/sdc2-challenge/description>

## Description of the Challenge



SDC2 is a source finding and source characterisation data challenge on a simulated SKA HI data product.

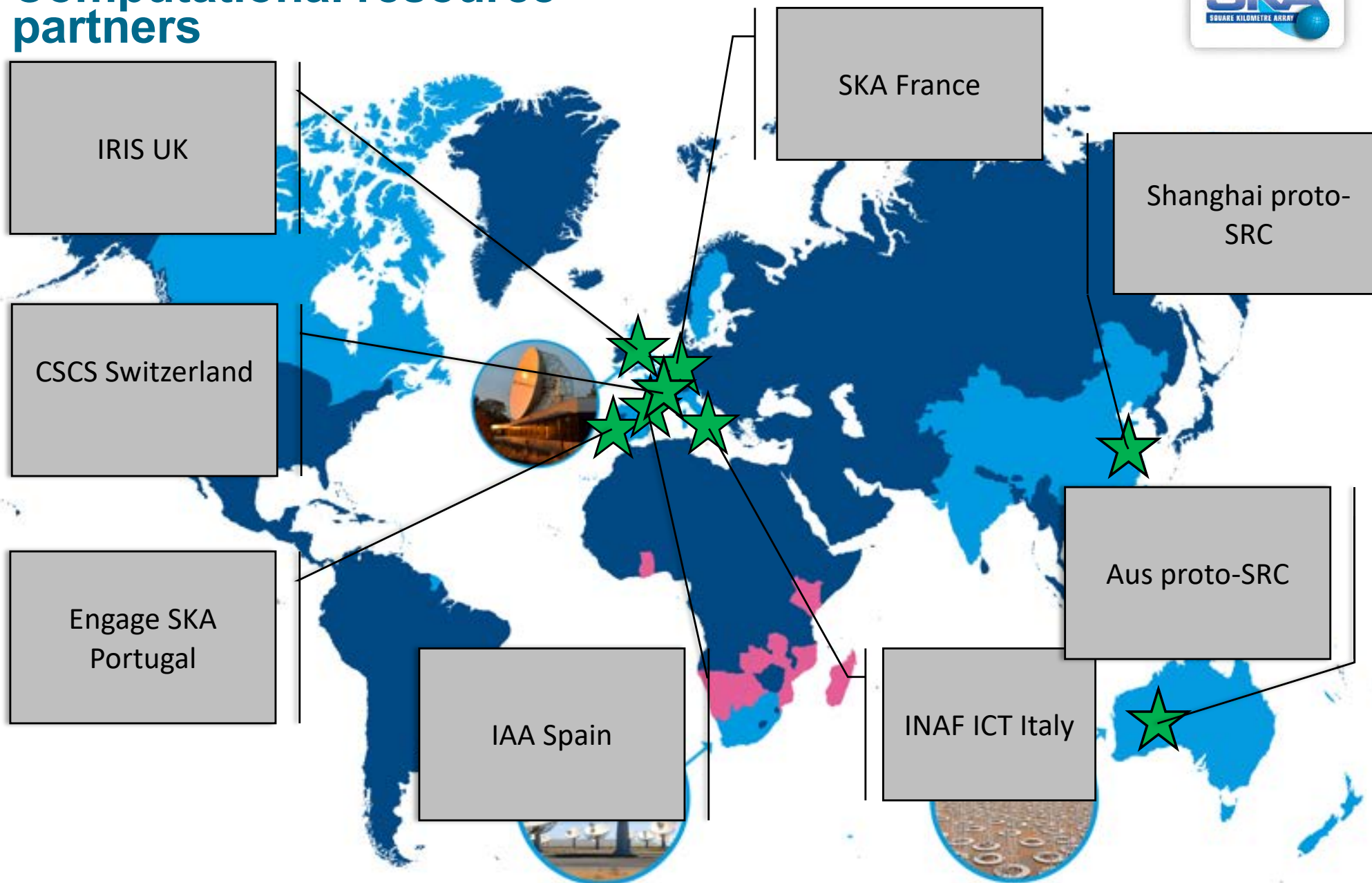
**Summarised details of the simulated data can be found [here](#), and a full description of the data and the challenge is available [here](#).**

Participating teams are invited to access the full-size data cube on dedicated facilities provided by our computational resource partners. Details on each resource and how to request access are [here](#). Each team will select their preferred computational resource within those available, and will deploy there their data analysis pipeline. A small portion of the full datacube is available for direct download to help with the initial data inspection and pipeline design.

Teams will undertake:

1. **Source finding**, defined as the location in RA (degrees), Dec (degrees) and central frequency (Hz) of the dynamical centre of each source.
2. **Source property characterisation**, defined as the recovery of the following properties:

# Computational resource partners



# Science Data Challenges (SDCs)

**Goal:** Prepare the community for SKA advanced data products

**Benefits:**

- Familiarise the community with size and complexity of SKA data
- Enable the development of analysis methods
- Support the design of future SKA surveys

Data products that are prepared for the challenges will also be made available in the long term.



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**Goal:** Prepare the community for SKA advanced data products

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- Enable the development of analysis methods
- Support the design of future SKA surveys
- Familiarise the community with data access models
- Test SKA Regional Centre prototyping
- Encourage best practices for Open Science and reproducibility



## General access to SWG-specific talks/meeting

- Many excellent initiatives on-going in SWGs for regular virtual events
- Interest has been expressed for cross-SWG awareness and some limited access to other SWG events
- Request for info/links for upcoming series that we would share
  - Would some/many other participants be welcome?
  - Distribution only amongst SWG Chairs or more broadly?



# AOB

- ???

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