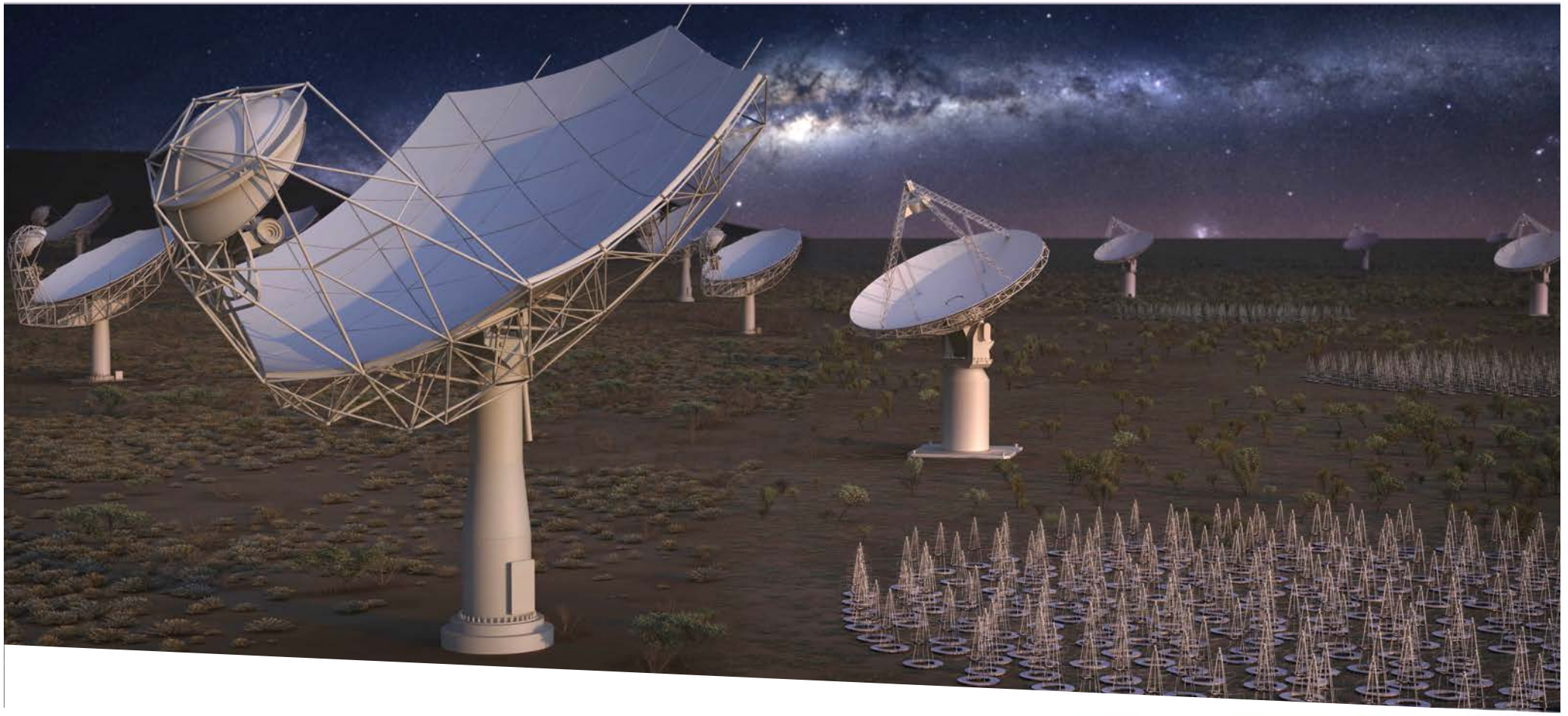
SKA SWG Update



SQUARE KILOMETRE ARRAY

Exploring the Universe with the world's largest radio telescope

Robert Braun, Science Director

16 June 2020

Science Activity Updates

- Science Data Challenge Update (Anna)
- Construction Proposal
  - SWG review of science sections ongoing
- Round table SWG updates (All)
- AOB

SDC update

Science team

Philippa Hartley

Lara Alegre

Operations team

James Collinson

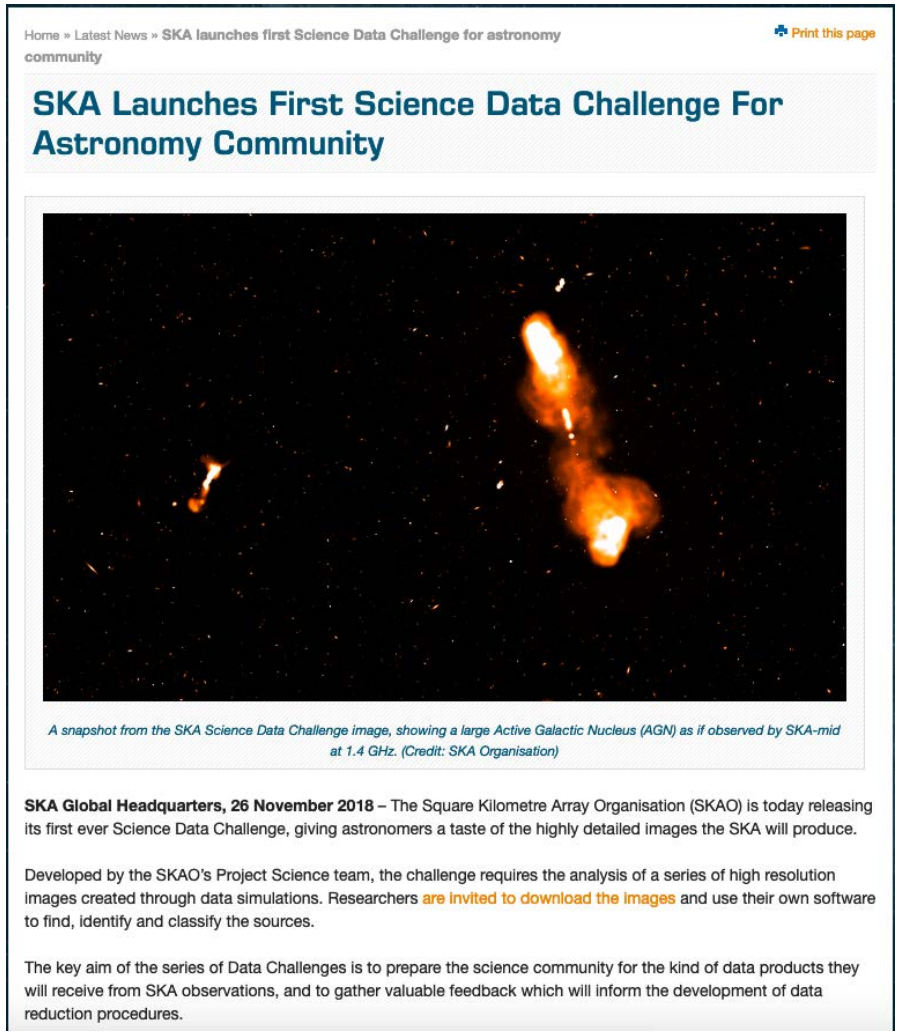
Anna Bonaldi

Robert Braun

Rohini Joshi

SDC1 update

- SDC1 paper submitted to MNRAS
- SDC1 scoring code re-implemented as a python package (SKA SAFe software development, J. Collinson)
- Framework in place for the scoring of the next challenge



Home » Latest News » **SKA launches first Science Data Challenge for astronomy community**

Print this page

SKA Launches First Science Data Challenge For Astronomy Community

A snapshot from the SKA Science Data Challenge image, showing a large Active Galactic Nucleus (AGN) as if observed by SKA-mid at 1.4 GHz. (Credit: SKA Organisation)

SKA Global Headquarters, 26 November 2018 – The Square Kilometre Array Organisation (SKAO) is today releasing its first ever Science Data Challenge, giving astronomers a taste of the highly detailed images the SKA will produce.

Developed by the SKAO's Project Science team, the challenge requires the analysis of a series of high resolution images created through data simulations. Researchers are invited to download the images and use their own software to find, identify and classify the sources.

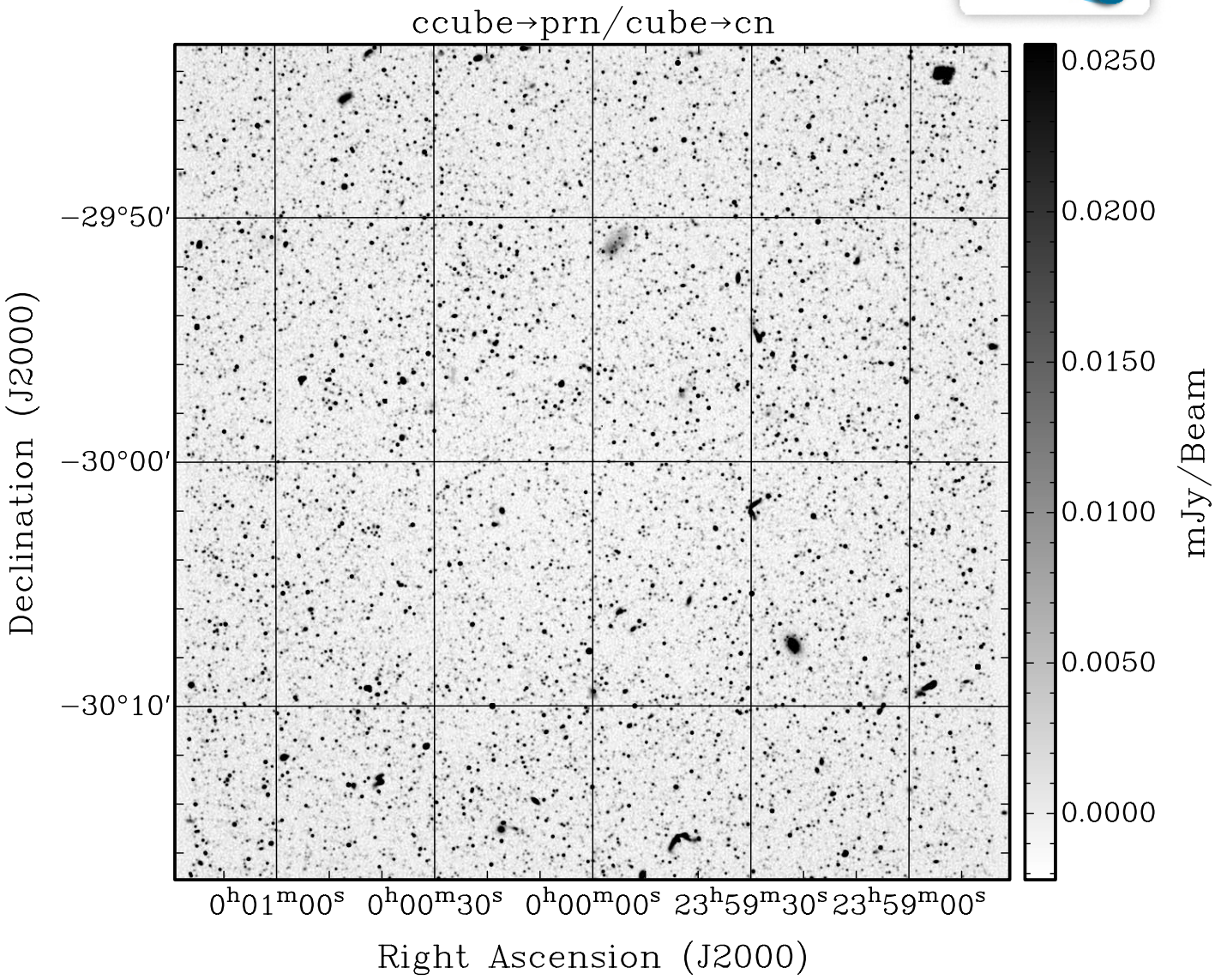
The key aim of the series of Data Challenges is to prepare the science community for the kind of data products they will receive from SKA observations, and to gather valuable feedback which will inform the development of data reduction procedures.

SDC2 status

Task	Status
Dataset	Sharing prototype HI and continuum data for feedback through HI SWG chairs
Computational resources	Progressing agreements with HPC facilities to provide computational resources for the challenge
Supporting website	Site under construction containing links to the test data, instructions, details of the HPC facilities, leaderboard, links to discussion forum, etc.
Scoring code	SDC2 scorer to be available from the start of the challenge, for teams to self-assess their performance

SDC2 dataset

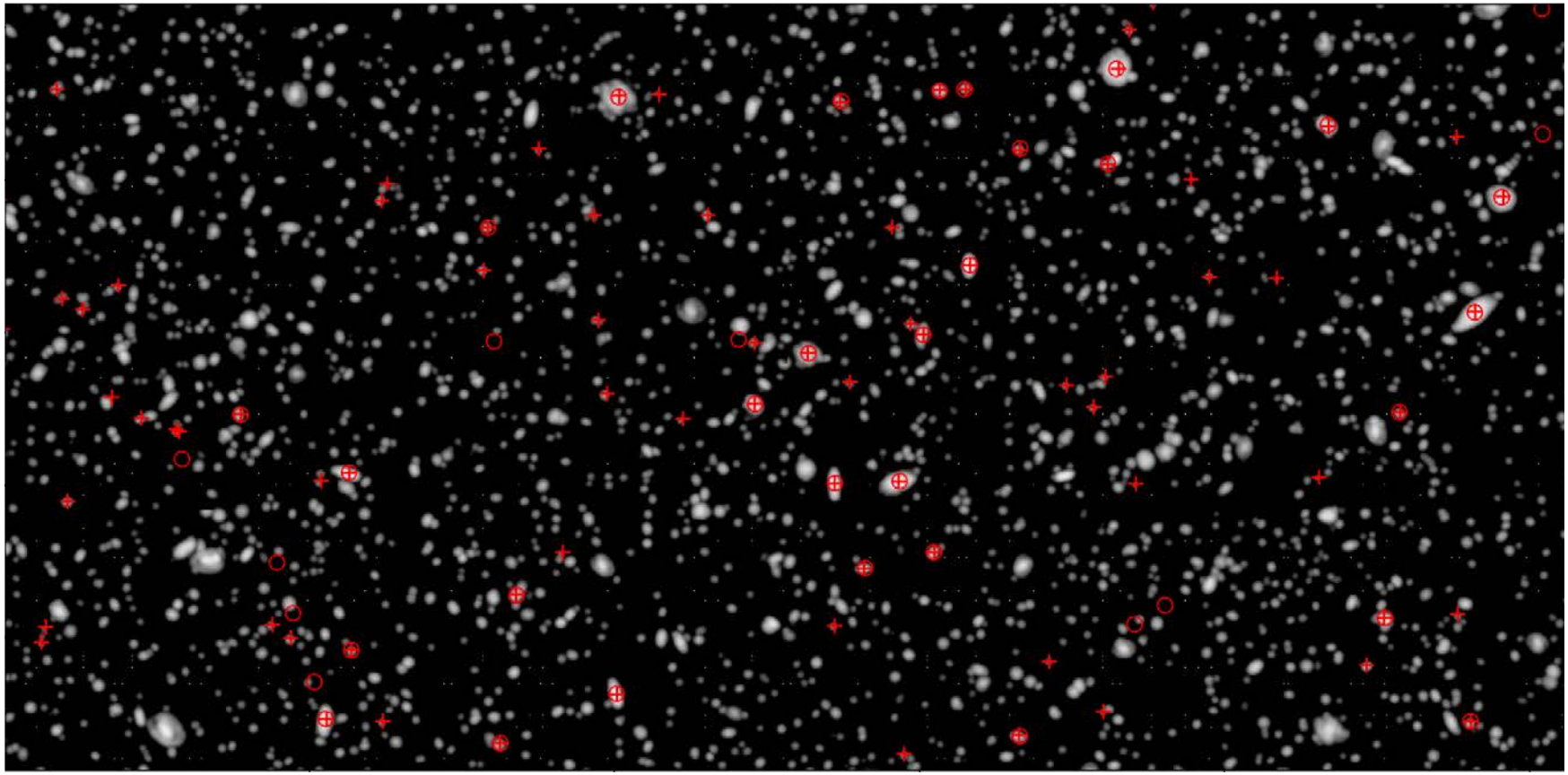
- Prototype HI cube (3500 channels) and continuum cube (9 x 50 MHz) ready
- HI data product includes imperfect continuum subtraction (0.1% RMS correlated over 10 MHz red noise as test case)
- 35 X 35 arcmin cubes being shared with a few HI SWG representatives for feedback



Continuum with noise addition and PSF convolution.

SDC2 dataset

- Prototype HI cube (3500 channels) and continuum cube (9 x 50 MHz) ready
- HI data product includes imperfect continuum subtraction (0.1% RMS correlated over 10 MHz red noise as test case)
- 35 X 35 arcmin cubes being shared with a few HI SWG representatives for feedback



HI sky before noise addition and PSF convolution. Red symbols are “detections” in noisy cube with some default search parameters.

SDC2 access and processing

Description

Provide access to different cluster facilities to assist the users on solving the challenge

Main goals

- Test and put in place strategies that take a step forward to deal with the real SKA data
- Exploring prototyping centralized data capabilities

Clusters
Specialized in different tasks

Supporting
Access and usage instructions

Teams
allocated to different clusters

Benefits

Users

- Provides Computing resources for the users
- No need to download the data
- Prepare the scientific community for future SKA practices

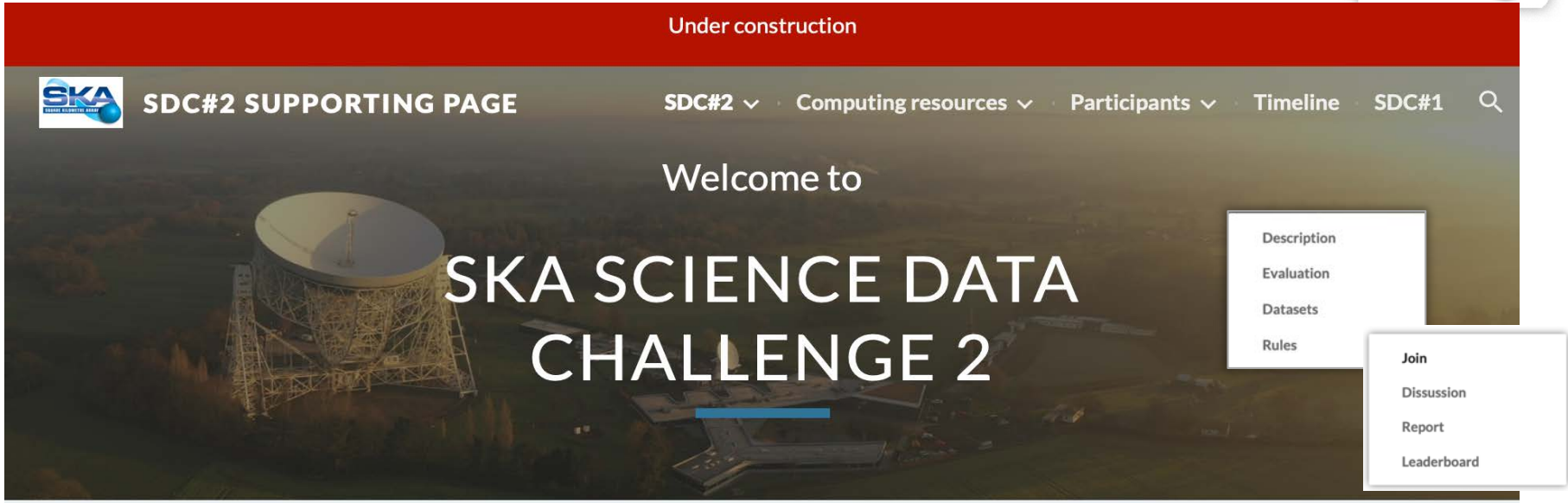
SKA

Tests SRC Prototyping

- Data access and transfer
- Containerization
- Access and security
- Protocols

Possible outcome with the challenge: pipelines

SDC2 Supporting page



- Overview of the Challenge
- Computing resources
- Submission templates
- Scoring code installation
- Joining option
- Linked to a discussion/support platform
- Timeline

- SKA Google Suite accounts
- Linked to the official SKA astronomers Challenge page
- SKA domain
- User-friendly
- Allow internal and external collaborations

Scoring code python package

Undergoing testing, to be to be distributed via PyPI

⚠ You are using TestPyPI – a separate instance of the Python Package Index that allows you to try distribution tools and processes without affecting the real index.

Search projects

Help Sponsor Log in Register

ska-sdc 1.0.4

```
pip install -i https://test.pypi.org/simple/ ska-sdc
```

✓ Latest version

Released: Jun 12, 2020

A package providing tools for the SKA Science Data Challenges.

Navigation

- Project description
- Release history
- Download files

Project links

- Homepage

Project description

Science Data Challenge Scoring Code API

The SKA Science Data Challenge #1 (https://astronomers.skatelescope.org/ska-science-data-challenge-1/) tasked participants with identifying and classifying sources in synthetic radio images.

In addition to the synthetic images, participants were provided with a section of the 'truth catalogue' of sources used to generate the artificial data. Comparing the truth catalogue with the 'submission catalogue' produced by a participant's solution would provide a means of determining the success of the solution.

To evaluate the accuracy of the results, a program was developed to cross-match sources between the submission and truth catalogues, and calculate a 'score' based on the result of this cross-match.

SKA Science

- Updates by SWG
  - ….

SQUARE KILOMETRE ARRAY

Exploring the Universe with the world's largest radio telescope

www.skatelescope.org