

KCDC:

The KASCADE Cosmic ray Data Centre

Workshop @ KIT 2/11/2017



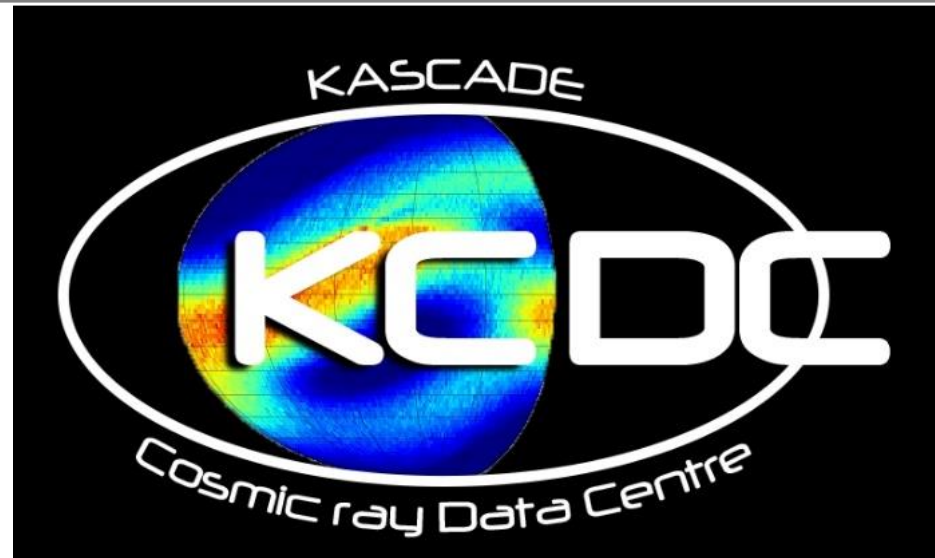
Andreas Haungs

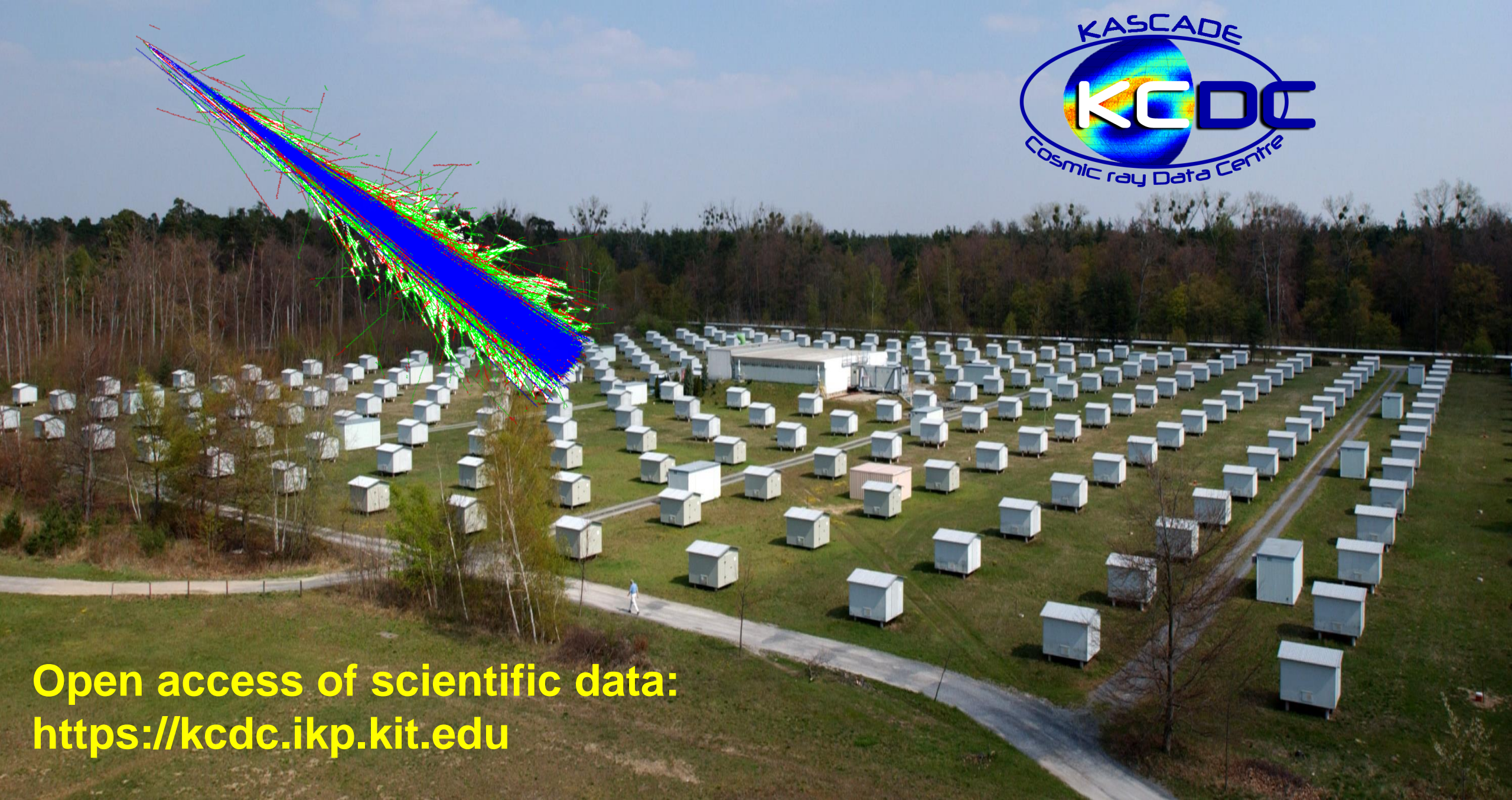
HELMHOLTZ

RESEARCH FOR
GRAND CHALLENGES



Allianz für Astroteilchenphysik

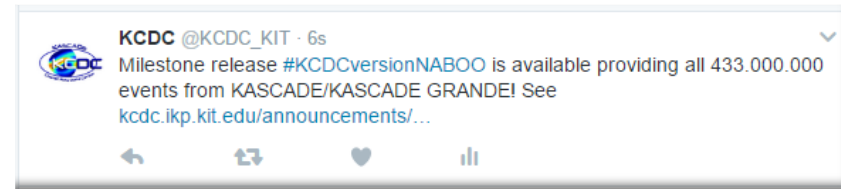
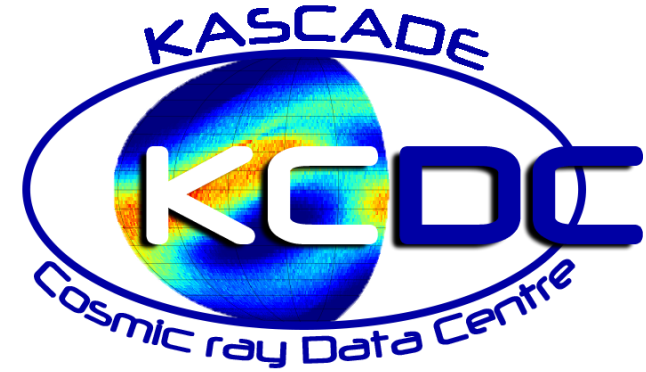




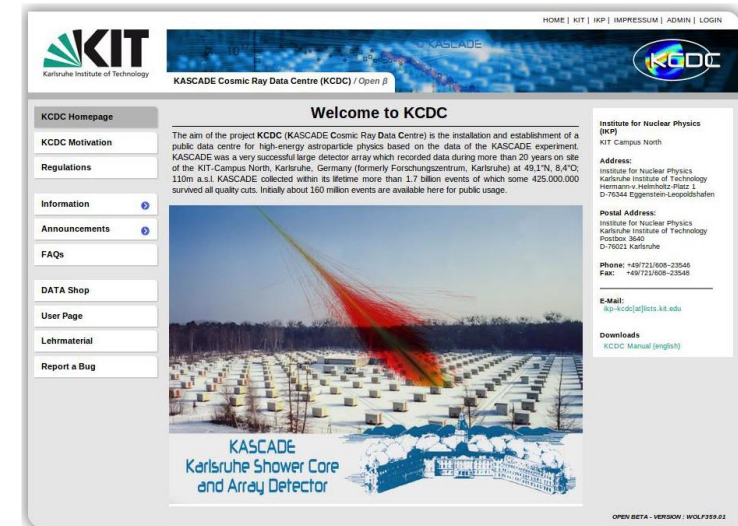
Open access of scientific data:
<https://kcdc.ikp.kit.edu>

<https://kcdc.i kp.kit.edu/>

- **KCDC = publishing research data from the KASCADE experiment**
- **Motivation and Idea of Open Data: general public has to be able to access and use the data the data has to be preserved for future generations**
- **Web portal: providing a modern software solution for publishing KASCADE data for a general audience In a second step: release the software as Open Source for free use by other experiments**
- **Data access: Version NABOO is released (Feb.2017) $4.3 \cdot 10^8$ EAS events are available**



#KCDC_KIT



Paper in preparation

KCDC in a nutshell

- providing open access to astroparticle physics research data as required by funding agencies

- **data provider**

- follows the “Berlin Declaration on Open Data and Open Access”
- free, unlimited, open access to KASCADE cosmic ray data
- selection of fully calibrated quantities and detector signals
- reliable data source
- guaranteed data quality

- **information platform**

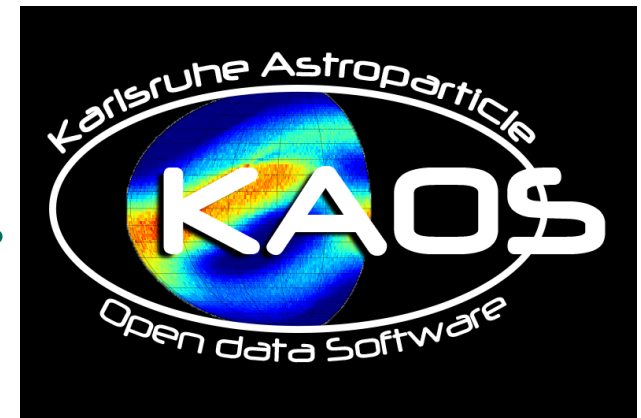
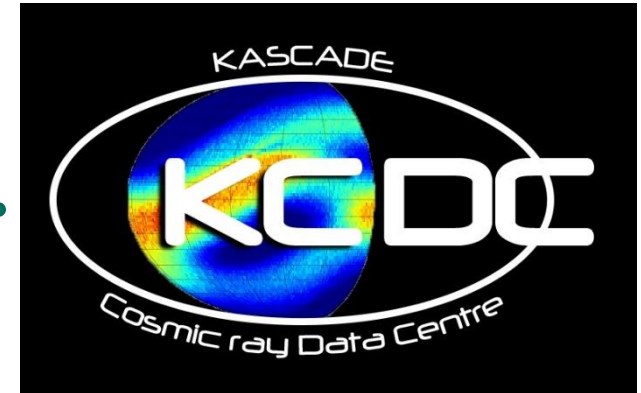
- experiment description
- meta information for data analysis
- physics background
- use of modern and open source web technologies
- tutorials (focused on teachers and pupils)

- **as long-term digital data archive**

- archive of software and data
- for the collaboration
- for the public



#KCDC_KIT



<https://kcdc.ikp.kit.edu/>

NABOO 2.0 is released!

27.10.2017



The screenshot shows the KCDC website homepage. At the top, there is a navigation bar with links: [[wocheleadadmin]] | KIT | IKP | HOME | Impressum | admin | logout. The main header includes the KIT logo (Karlsruhe Institute of Technology) and the KCDC logo. Below the header is a banner for 'KASCADE Cosmic Ray Data Centre (KCDC) / Open β '. The main content area is titled 'Welcome to KCDC' and contains a paragraph about the project's aim. A large, tilted image of a tweet is overlaid on the page. The tweet, from @KCDC_KIT, reads: '#KCDCversionNaboo 2.0 is released! Simulation sets for 6 different high energy simulation models are available! kcdc.i kp.kit.edu/announcements/...'. Below the text is a 2D histogram plot with 'true primary Energy (log₁₀) [eV]' on the y-axis (ranging from 13 to 19) and 'reconstructed primary Energy (log₁₀) [eV]' on the x-axis (ranging from 13 to 19). A color scale on the right indicates the number of events, ranging from 0 (blue) to 12000 (red). The tweet is dated '12:24 pm - 27 Oct 2017'. Below the tweet is a 'Tweet your reply' button. At the bottom of the page, there is a red banner that says '+++ The new KCDC version NABOO 2.0 has been released !!! +++'. The footer contains the text 'KCDC OPEN - BETA - VERSION NABOO 2.0 BASED ON: KAOS (1.0.0)'. On the right side of the page, there is contact information for the Institute for Nuclear Physics (IKP) at the Karlsruhe Institute of Technology, including an address, postal address, phone, fax, and email.

KIT
Karlsruhe Institute of Technology

KASCADE Cosmic Ray Data Centre (KCDC) / Open β

Welcome to KCDC

The aim of the project **KCDC (KASCADE Cosmic Ray Data Centre)** is the installation and establishment of a data centre for high-energy astroparticle physics based on the data of the KASCADE experiment, a very successful large detector array which recorded data during more than 10 years at the Karlsruhe Institute of Technology (Forschungszentrum Karlsruhe) in Karlsruhe, Germany (formerly Forschungszentrum Karlsruhe) and are made available to the scientific community.

KCDC
@KCDC_KIT

#KCDCversionNaboo 2.0 is released!
Simulation sets for 6 different high energy simulation models are available!
[kcdc.i kp.kit.edu/announcements/...](http://kcdc.i kp.kit.edu/announcements/)

12:24 pm - 27 Oct 2017

Tweet your reply

KASCADE
KCDC
Cosmic Ray Data Centre

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Downloads
[KCDC Manual \(en\)](#)
[KCDC Simulations Manual \(en\)](#)

+++ The new KCDC version NABOO 2.0 has been released !!! +++

KCDC OPEN - BETA - VERSION NABOO 2.0 BASED ON: KAOS (1.0.0)

KRAD: an Helmholtz IVF imitative

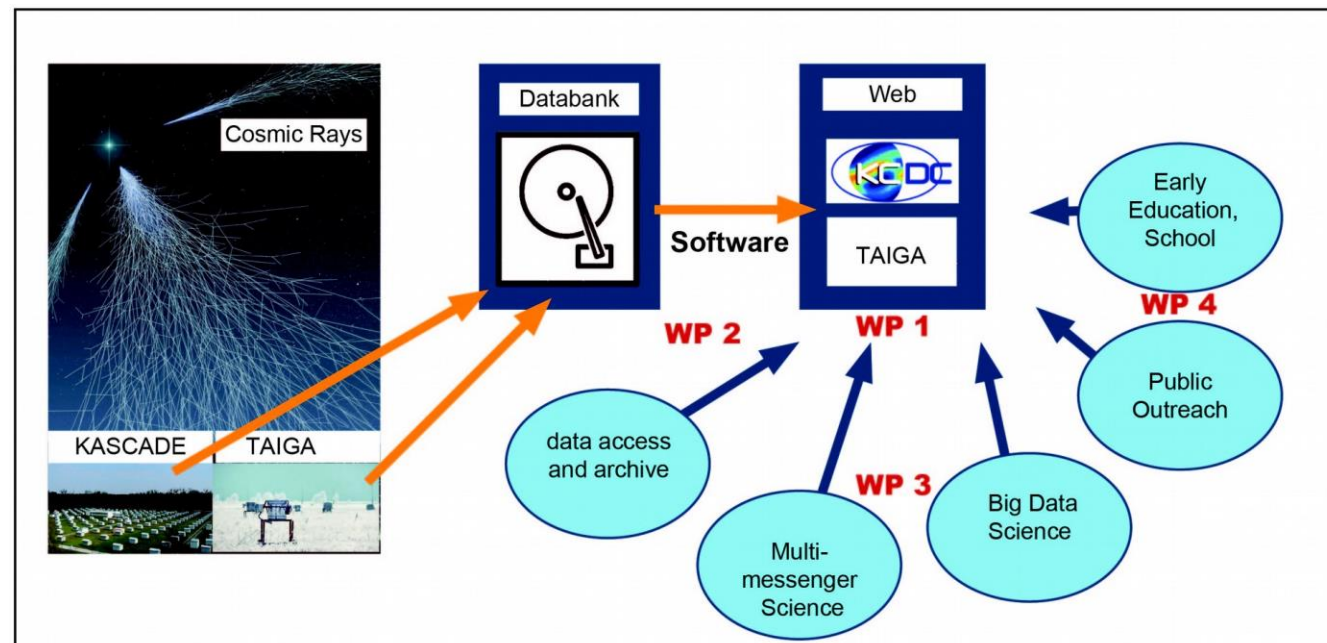
Karlsruhe-Russian Astroparticle Data Life Cycle Initiative

• Basics

- Application submitted to RNF and Helmholtz (2018-2020)
- Russia: SINP MSU, ISU, ISDCT SB RAS
- Germany: KIT, (DESY)
- Team leaders: A. Kryukov (SINP MSU) and A. Haungs + A. Streit (KIT)

• Main targets of the Project

- Develop an open science system based on KCDC
- Extension example: data from Tunka/TAIGA and KASCADE-Grande
- Developing integrated solutions of distributed data storage algorithms and techniques with a common meta-catalog
- Development of efficient machine-learning techniques
- Creation of an educational subsystem



KRAD is a first step in extension and generalization and internationalization of KCDC

KCDC in context of the *Analysis & Data Centre in Astroparticle Physics*

- Data preservation
- Metadata preservation
- Data storage (archive)
- Computing services (Tier-centre for astroparticle physics)
- Data access (policy, technology, rate)
- Training on Data use (maintenance, tutorials)
- Data analysis, Simulation, modeling
- Data science (tools, e.g. deep learning)
- Data publication / Outreach
- Data exchange
- Data catalogues
-

KCDC can serve as concept
for some of the pillars, but
not for all!

