Berkeley Open Infrastructure for Network Computing - an open distributed computing system

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The Berkeley Open Infrastructure for Network Computing (BOINC) is an open source middleware system for volunteer and grid computing. It was originally developed to support the SETI@home project before it became useful as a platform for other distributed applications in areas as diverse as mathematics, medicine, molecular biology, climatology, and astrophysics. The intent of BOINC is to make it possible for researchers to tap into the enormous processing power of personal computers around the world.

BOINC was originally developed to manage the SETI@home project.

The original SETI client was a non-BOINC software exclusively for SETI@home. As one of the first volunteer grid computing projects, it was not designed with a high level of security. Some participants in the project attempted to cheat the project to gain "credits", while some others submitted entirely falsified work. BOINC was designed, in part, to combat these security breaches.

The BOINC project started in February 2002 and the first version was released on 10 April 2002. The first BOINC-based project was Predictor@home launched on 9 June 2004. In 2009 AQUA@home deployed multi-threaded CPU applications for the first time, followed by the first OpenCL application in 2010.
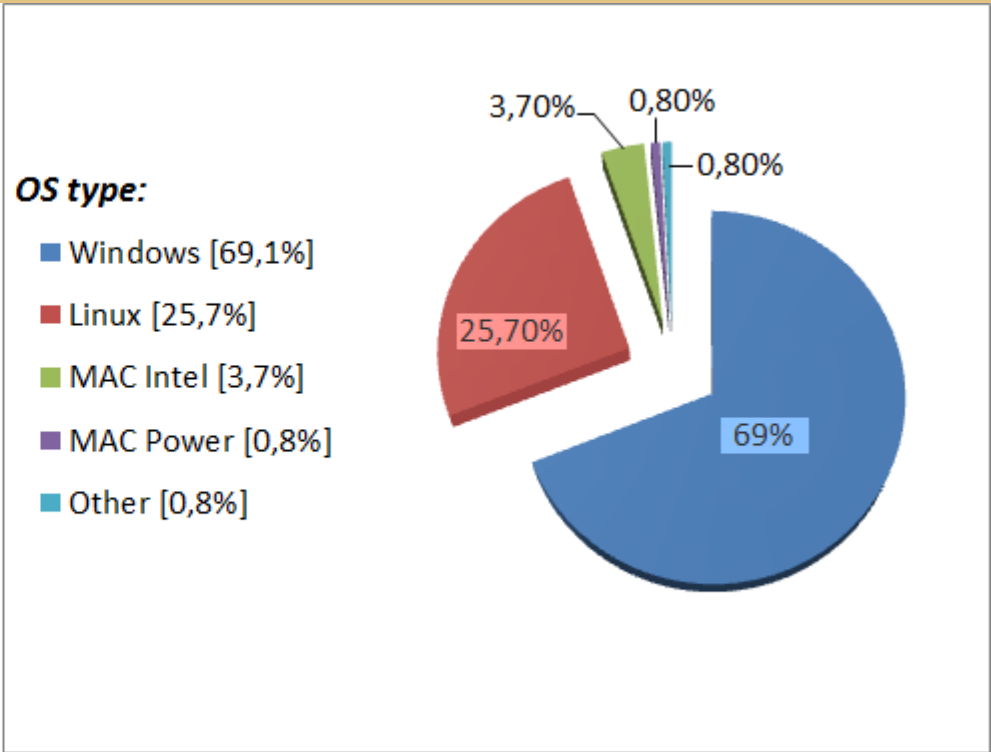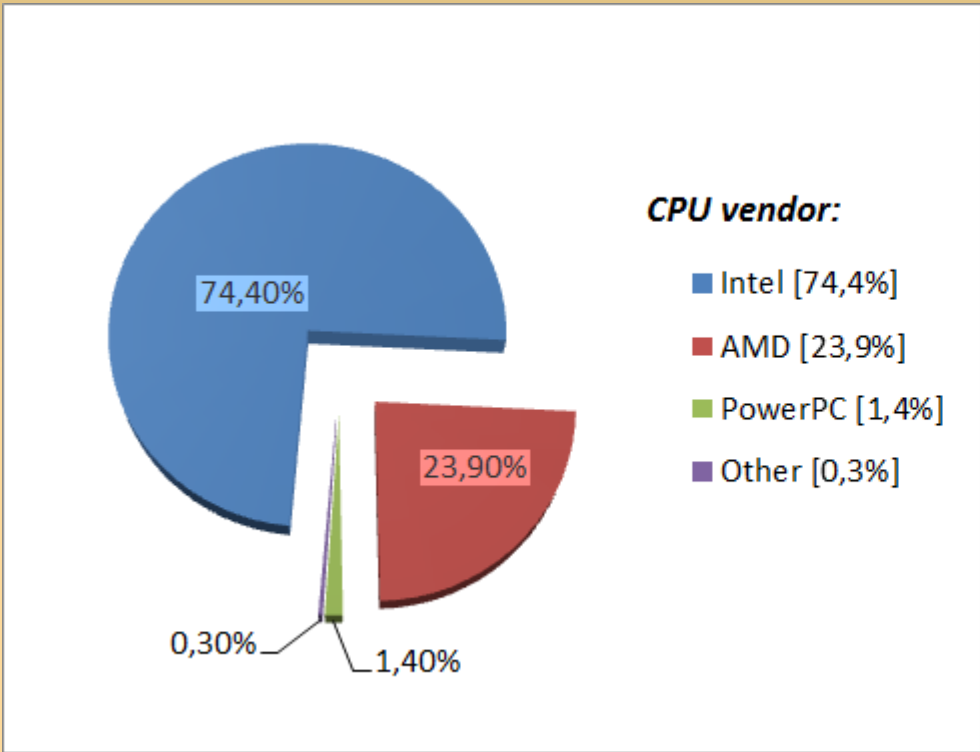
*Operating systems and processors of the BOINC users.*
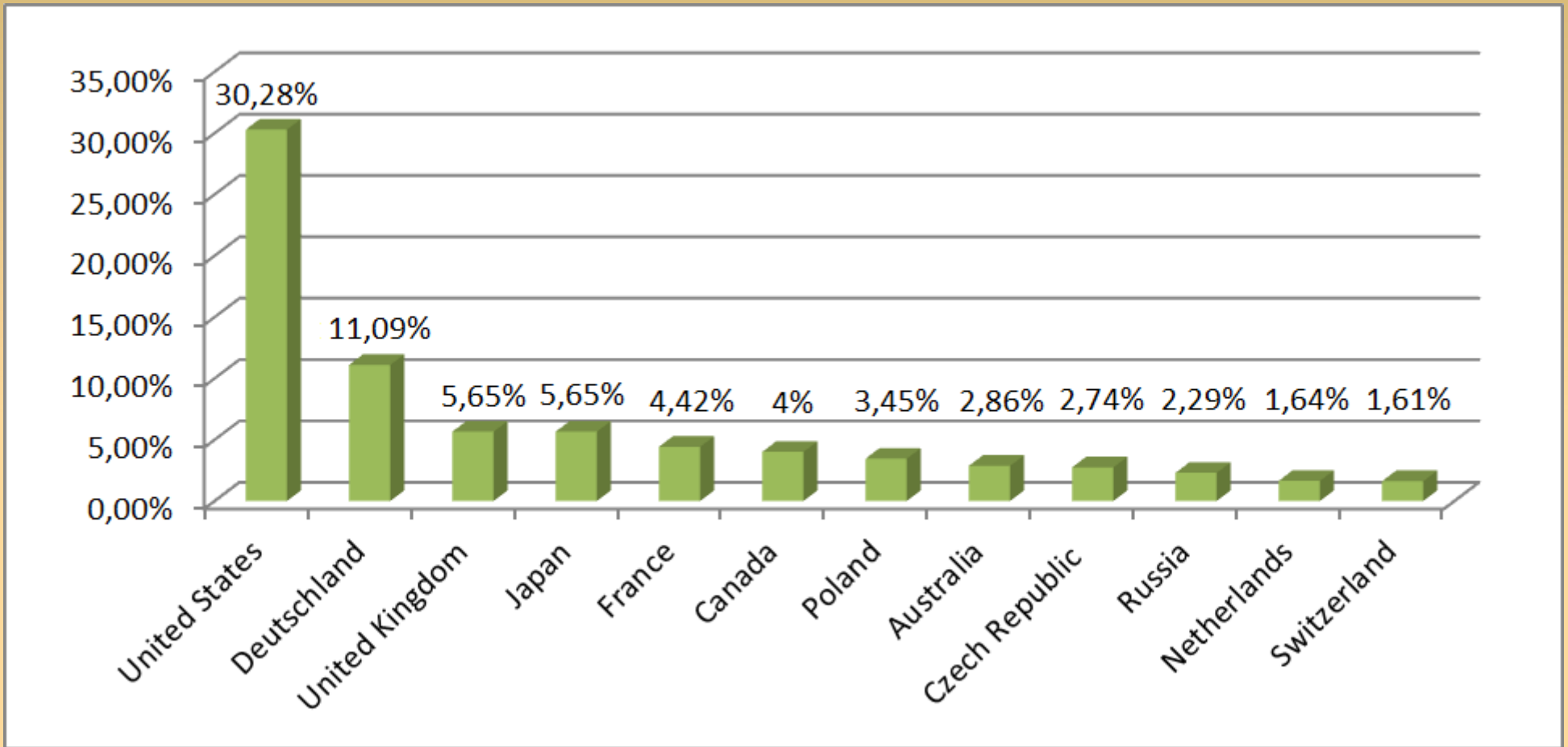
The country ranking in terms of quantity calculations carried out by members of the appropriate nationality.

SETI@home ("SETI at home") is an Internet-based public volunteer computing project employing the BOINC software platform, hosted by the Space Sciences Laboratory, at the University of California, Berkeley, in the United States. SETI is an acronym for the Search for Extra-Terrestrial Intelligence. Its purpose is to analyze radio signals, searching for signs of extra terrestrial intelligence, and is one of many activities undertaken as part of SETI.
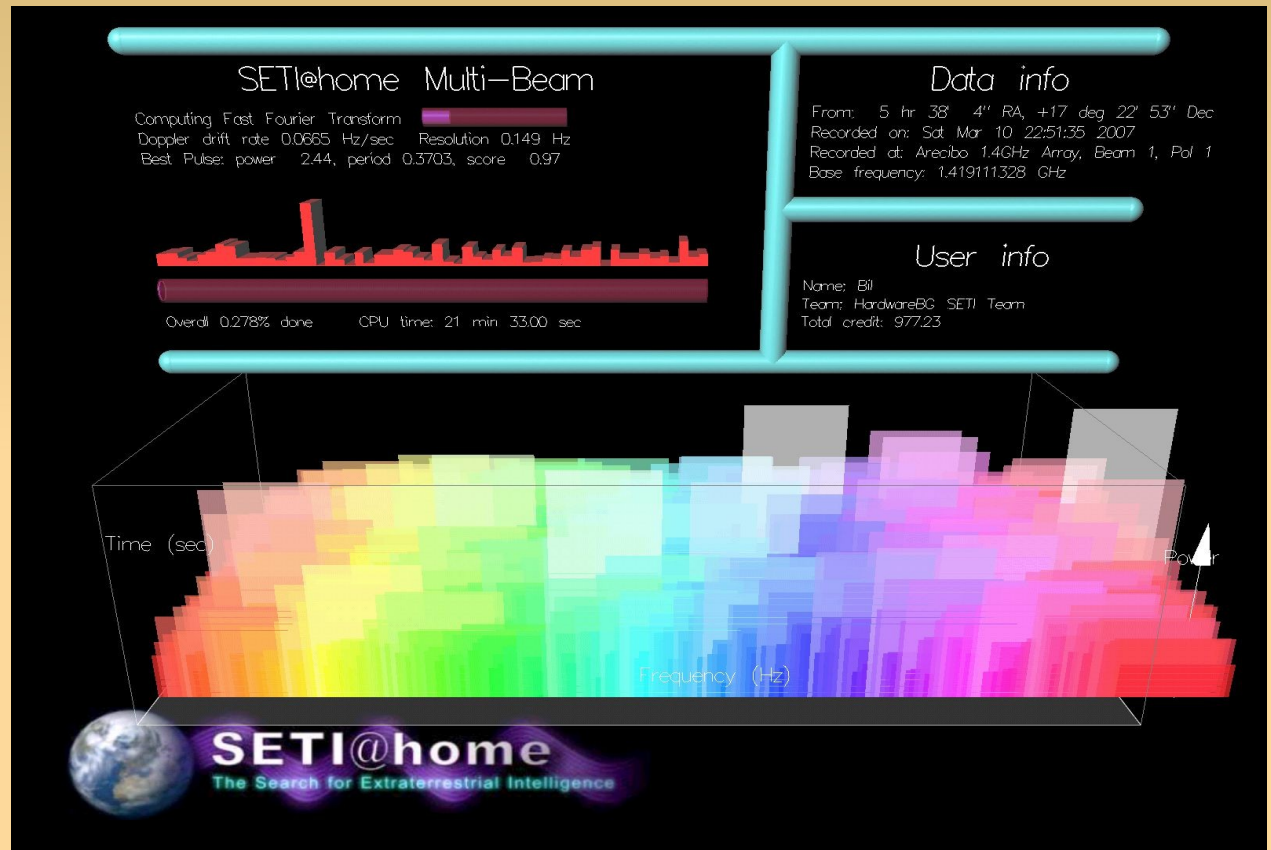
Snapshot of BOINC SETI@home Astropulse Screensaver.
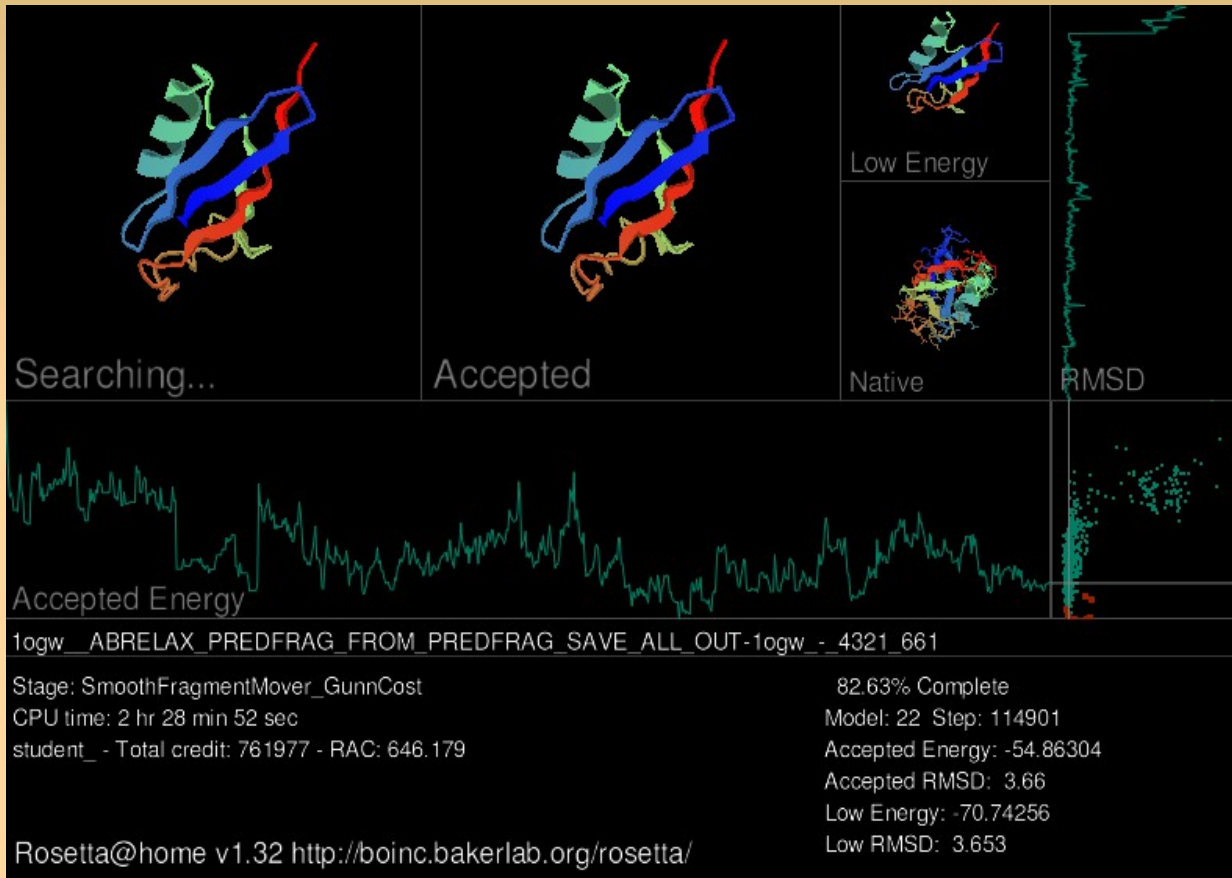
Rosetta@home screensaver, showing the progress of a structure prediction for a synthetic ubiquitin protein (PDB ID: 1ogw)

Rosetta@home *is a distributed computing project for protein structure prediction on the BOINC platform, run by the Baker laboratory at the University of Washington. Rosetta@home aims to predict protein–protein docking and design new proteins with the help of about sixty thousand active volunteered computers processing at 62 teraFLOPS on average as of October 18, 2011. Though much of the project is oriented towards basic research on improving the accuracy and robustness of the proteomics methods, Rosetta@home also does applied research on malaria, Alzheimer's disease and other pathologies.*

Einstein@Home is a volunteer distributed computing project hosted by the University of Wisconsin–Milwaukee and the Max Planck Institute for Gravitational Physics (Albert Einstein Institute, Hannover, Germany). The project is directed by Bruce Allen. Einstein@Home searches through data from the LIGO detectors for evidence of continuous gravitational-wave sources, which are expected for instance from rapidly spinning non-axisymmetric neutron stars. On August 12, 2010, the first discovery by Einstein@Home of a previously undetected radio pulsar J2007+2722, found in data from the Arecibo Observatory, was published in Science. The project has discovered 46 pulsars as of August 2012.
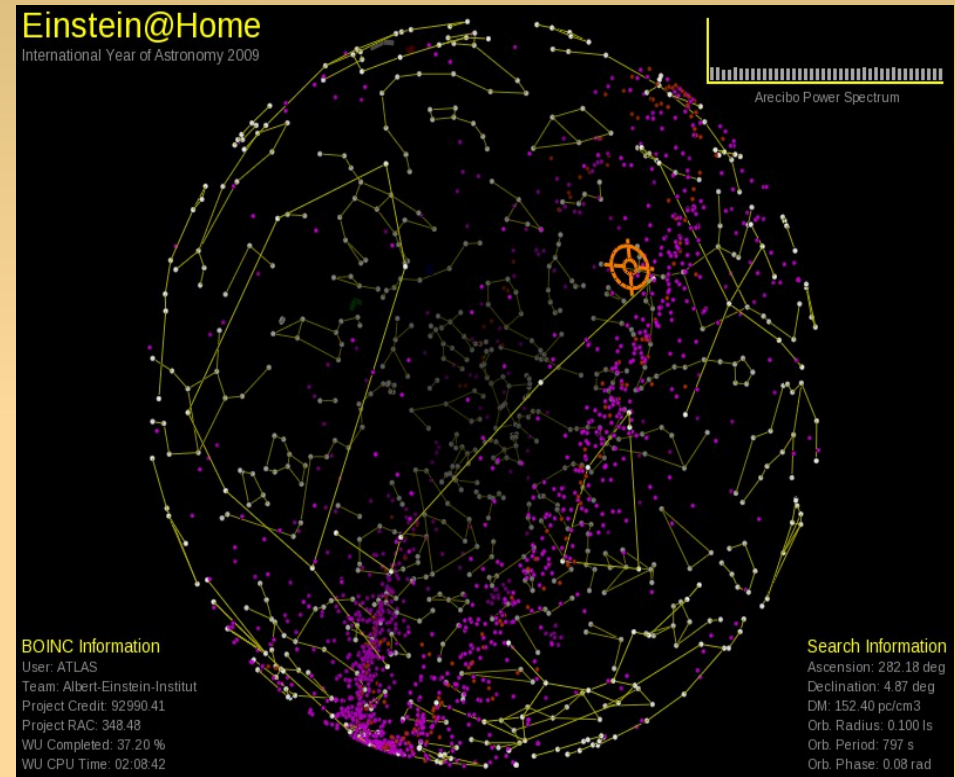

Einstein@Home Screensaver

Climateprediction.net Screensaver
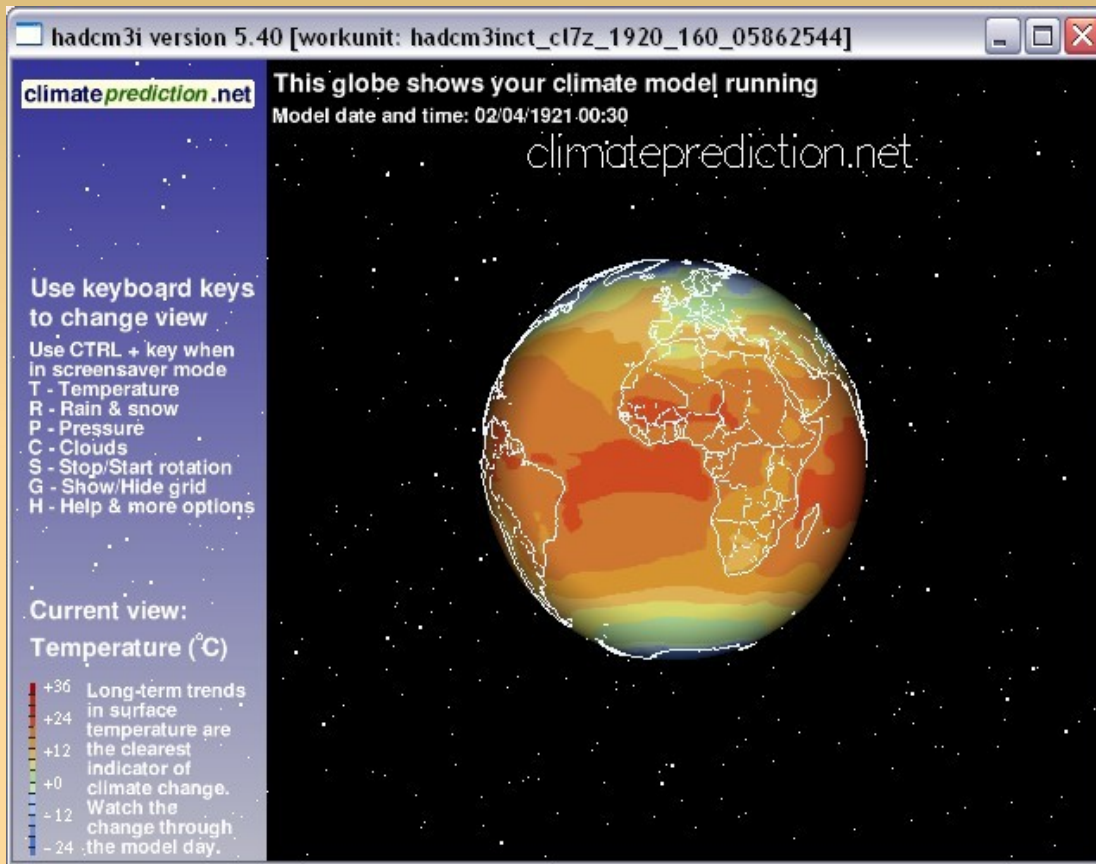
Climateprediction.net, or CPDN, is a distributed computing project to investigate and reduce uncertainties in climate modelling. It aims to do this by running hundreds of thousands of different models (a large climate ensemble) using the donated idle time of ordinary personal computers, thereby leading to a better understanding of how models are affected by small changes in the many parameters known to influence the global climate.

Radioactive@Home *is a polish science project using distributed computing capabilities of BOINC platform. The main goal of the project is to create free and constantly updated map of radiation available for all people, by gathering information about gamma radiation using using sensors connected to computers of volunteers willing to participate in the project. The project uses dedicated hardware sensor; without it the app does nothing and no credits are granted.*

Project is completely non-commercial, participating will be free of charge and the software will be licensed under the GNU General Public License (GPL). on your computer.
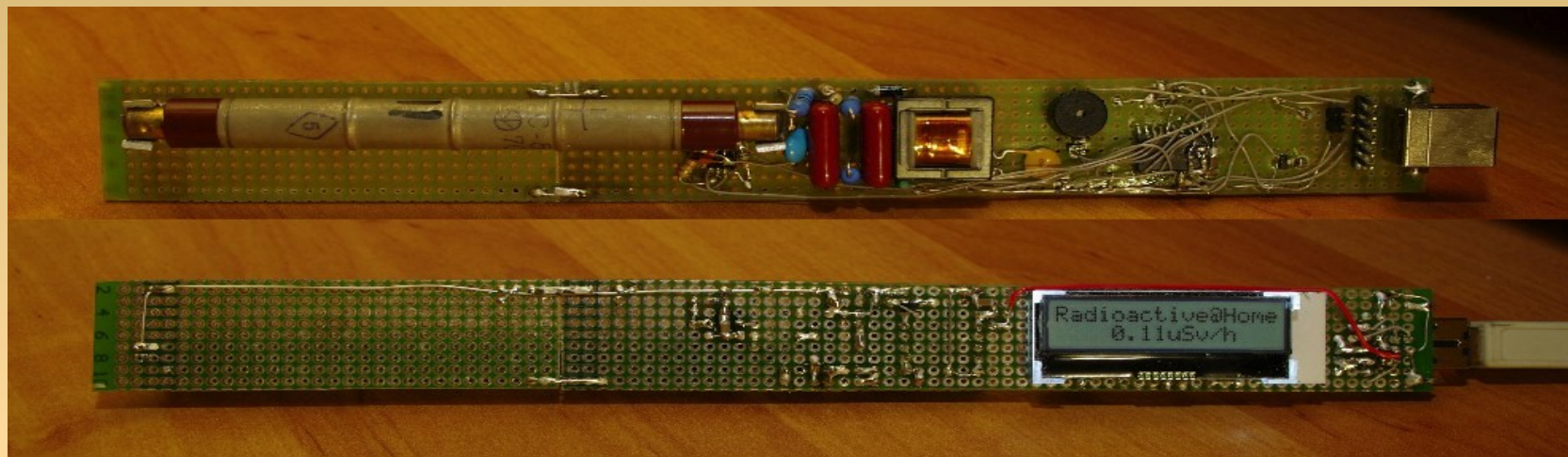
Radioactive@Home Sensor Version 2
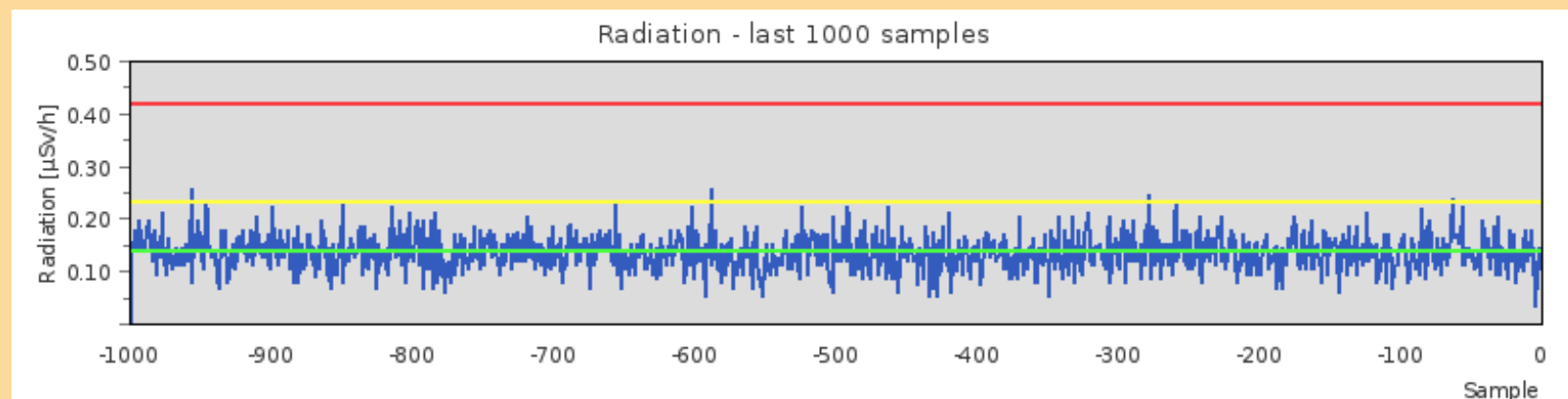
Thank you for your attention.

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