

The Debian Astro project

A Debian Pure Blend for astronomy and astrophysics

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- Free Linux based operating system
- One of the oldest distributions (founded 1993)
- **Free** as in “Free Speech”
- > 51,000 software packages
- > 1,000 official developers
- Social Contract; Debian Free Software Guidelines
- Base for many derivatives: Ubuntu, Mint, ...
- Current stable version: Debian 9 “Stretch”, since June 2017
- Next version: Debian 10 “Buster”



- Debian: General-purpose distribution
- Problem: soo many packages
- Structure by topic
- propagate usage of Debian in a specific field
- build a complete working environment
- *Blended tea*: a combination of different kinds of teas to guarantee consistent quality (Wikipedia)



- Rationale: Experts in the field need help in packaging
- Upstream gets feedback from software integration
- Upstream developers even may become Debian maintainers
- tie a solid network of Debian developers, upstream, and users



- **Debian Astro** - Astronomy and astrophysics
- **Debian GIS** - Geographical Information Systems
- **DebiChem** - Chemistry
- **Debian Med** - Strong focus on Microbiology
- **NeuroDebian** - Neuroscience
- **Debian Science** - “Umbrella” blend for sciences
- **Debian Edu** - Education of all kind
- Debian Games, Debian Junior, Debian Multimedia, Hamradio, ...



The Debian Astro Pure Blend

- currently 325 packages (more in preparation)
- 19 metapackages
- Web page, “tasks” pages
- Handle citations, entries in the Astronomical Software Code Library
- First release with Debian Stretch (June 2017)



Debian Astro Web Pages

Debian Astro Pure Blend

https://blends.debian.org/astro/

PURE BLEND

Debian Astro Packages Contact Contribute

debian / debian pure blends / debian astro

Debian Astronomy

Debian Astro is a "Debian Pure Blend" with the aim to develop a Debian based operating system that fits the requirements of both professional and hobby astronomers. It integrates a large number of [software packages](#) covering telescope control, data reduction, presentation and other fields.

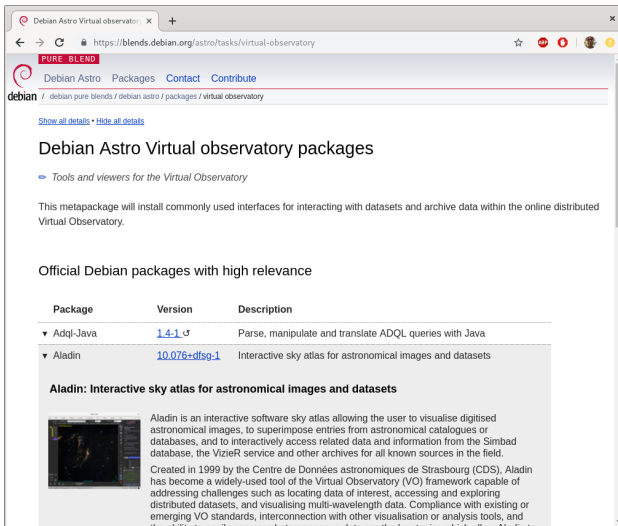
astrometry.net stellarium python-astropy astropy gnudatalanguage pyephem skycat glueviz wsclean libfits-java wcslib stiff fitscut

Installation

On an existing Debian Stretch installation, you can get the Debian Astro Pure Blend just by installing its [metapackages](#). To get a comprehensive selection of packages, you also may install the package `astro-all` with the command `sudo apt install astro-all`.



debian
astronomy



The screenshot shows a web browser window with the URL `https://blends.debian.org/astro/tasks/virtual-observatory`. The page features the Debian logo and navigation links for 'Debian Astro', 'Packages', 'Contact', and 'Contribute'. The main heading is 'Debian Astro Virtual observatory packages', with a sub-heading 'Tools and viewers for the Virtual Observatory'. A paragraph explains that this metapackage installs interfaces for interacting with datasets and archive data. Below this, a section titled 'Official Debian packages with high relevance' contains a table with three columns: 'Package', 'Version', and 'Description'. The table lists 'Adql-Java' (version 1.4-1) and 'Aladin' (version 10.076+dfsg-1). A detailed description for 'Aladin' follows, including a small thumbnail image of the software interface and text explaining its purpose as an interactive sky atlas for astronomical images and datasets, created in 1999 by the Centre de Données astronomiques de Strasbourg (CDS).

Package	Version	Description
▼ Adql-Java	1.4-1	Parse, manipulate and translate ADQL queries with Java
▼ Aladin	10.076+dfsg-1	Interactive sky atlas for astronomical images and datasets

Aladin: Interactive sky atlas for astronomical images and datasets

Aladin is an interactive software sky atlas allowing the user to visualise digitised astronomical images, to superimpose entries from astronomical catalogues or databases, and to interactively access related data and information from the Simbad database, the Vizier service and other archives for all known sources in the field.

Created in 1999 by the Centre de Données astronomiques de Strasbourg (CDS), Aladin has become a widely-used tool of the Virtual Observatory (VO) framework capable of addressing challenges such as locating data of interest, accessing and exploring distributed datasets, and visualising multi-wavelength data. Compliance with existing or emerging VO standards, interconnection with other visualisation or analysis tools, and

Debian Astro Pure Blend Contents

- Base libraries
 - cfitsio, wcslib, cpl, starlink, casacore
- Python
 - Astropy, affiliated packages
- "Legacy"
 - IRAF, PyRAF
 - ESO-MIDAS
 - Tcl/Tk (DS9, fv, skycat)
 - GDL (IDL replacement)
- Java/Virtual Observatory
 - Aladin, Topcat, ADQL
- Radio Astronomy
 - cassbeam, wsclean, aoflagger
- much more (education, publication, amateurs, ...)

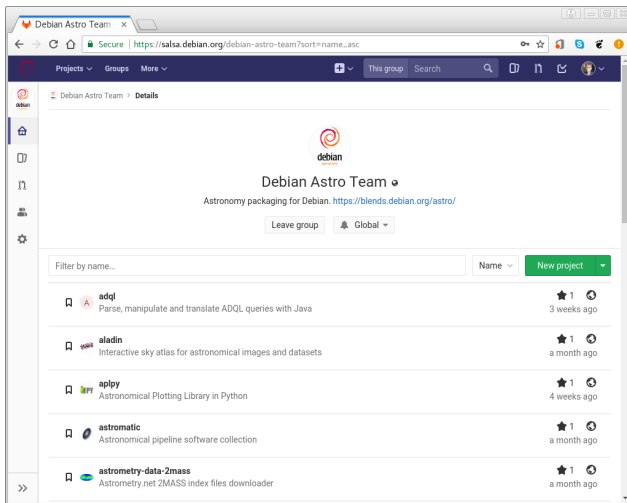


The Debian Astro Team

- Mailing list: 170 subscribers
- Team members
 - total: 32
 - uploaders: 17
- Team maintained source packages: 179
- Git repositories in a central space (salsa.debian.org)
- Most packages have only one maintainer
- Some package not maintained by the Debian Astro team
 - educational
 - publishing
 - general physics, data analysis etc.



Debian Astro Development Server



The screenshot shows a web browser window displaying the Salsa page for the Debian Astro Team. The URL is https://salsa.debian.org/debian-astro-team?sort=name_asc. The page features the Debian logo and the text "Debian Astro Team" and "Astronomy packaging for Debian. <https://blends.debian.org/astro/>". Below this, there are buttons for "Leave group" and "Global". A search bar and a "New project" button are also visible. A list of projects is shown, each with a repository icon, name, description, star count, and update time.

Repository	Project Name	Description	Stars	Last Update
adql	adql	Parse, manipulate and translate ADQL queries with Java	1	3 weeks ago
aladin	aladin	Interactive sky atlas for astronomical images and datasets	1	a month ago
aply	aply	Astronomical Plotting Library in Python	1	4 weeks ago
astromatic	astromatic	Astronomical pipeline software collection	1	a month ago
astrometry-data-2mass	astrometry-data-2mass	Astrometry.net 2MASS index files downloader	1	a month ago



Advantages for Packaging: Technical

- simple installation for the users
- Testing:
 - install tests on 23 platforms (10 official, 13 unofficial)
 - regular integration tests (on each dependency change)
 - repeated “unofficial” install tests (Reproducible builds)
 - people doing research with software metrics
 - bug tracker is already there
- Coupled to distribution development
- Dependencies are recognized
 - automated “transitions” (recompilations) when ABI breaks
 - prevent from silent removal of dependencies
- Automatic migration to Ubuntu



Advantages for Packaging: Social

- Connecting with the astronomical software community
- Self-magnification: a strong Debian Astro Pure Blend will attract more people to contribute
- Others may contribute to the package: bugfixes etc.
- Debian is “bazaar” style: everyone can follow, everyone can contribute, development is transparent
- Packages may get some attention even if “orphaned”
 - Team uploads
 - Non-maintainer uploads (NMU)
 - QA team
 - package adoption
- Coordinate / Avoid duplication of development efforts



Debian as a Reference Platform

- Almost standard linux
- High quality standards
- Clear, consistent structure: comprehensive Debian policy, specific policies for different fields: Python, Java, Tcl/Tk, Science
- Lots of tools for packaging + package checks
- Patches from Debian often migrate upstream or “side stream” (to Macports, Fedora, ...)



- Stable version: package versions fixed after distribution release
 - currently Debian 9, “Stretch”
 - updates: Only bug fixes, no new versions
- Backports
 - new versions
 - no automated backporting, need to be maintained
- Ubuntu: similar, but needs extra approval
- No specific workflow in Debian Astro yet
 - may be adopted from NeuroDebian
 - first steps recently with Astropy



Packaging Rules, “Policy”

- Social Contract + Debian Free Software Guidelines: strict rules
- Debian policy
 - completely build from source
 - no convenience copies of code; re-use existing libraries
 - recursive packaging (package dependencies first, ...)
 - file system standard
 - package names, ...
- Specific policies (Python, Java, Tcl/Tk, Science)
- Portability (10 official architectures)
 - 32 vs. 64 bit
 - byte order
- Team maintenance



- Policy: <https://www.debian.org/doc/debian-policy>
- Developers Reference:
<https://www.debian.org/doc/manuals/developers-reference>
- Web page: <https://blends.debian.org/astro>
- Mailing lists:
 - Astro: <https://lists.debian.org/debian-astro>
 - Python: <https://lists.debian.org/debian-mentors>
 - Mentors: <https://lists.debian.org/debian-mentors>
 - Common development: <https://lists.debian.org/debian-devel>
- Salsa project; Git repositories:
<https://salsa.debian.org/debian-astro-team>
- IRC: <irc://irc.debian.org/debian-astro>



Thank you



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Debian Astro Team Uploaders

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