

Article 1: 14-Aug-2006

An Astronomers' Data Manifesto*Ray Norris, CSIRO ATNF, Australia*

When you look up an object in NED or Simbad, you're probably seeing only about half the data published in the journals. That's not the fault of the data centres, who do a magnificent job under enormous pressure. Nor is it the fault of the journals, most of whom would happily support a system to overcome this. It's because we, the astronomical community, have not got together to agree on what we want, or how to achieve it.

And did you know that a few years ago a war was fought on our behalf to oppose some daft international legislation which would have wrapped all our existing public-domain databases (like ADS, CDS, and NED) in a morass of legal red tape, making them illegal or inoperative? Neither did I. But because of a few effective and public-spirited individuals in ICSU and CODATA, we got to keep our databases. But let that be a warning – we'd better raise our game in data management, or we might lose what we've got.

Hence the following "Astronomers' Data Manifesto":

We, the global community of astronomy, aspire to the following guidelines for managing astronomical data, believing that they would maximise the rate and cost-effectiveness of scientific discovery. We do not underestimate the challenge, but believe that these goals are achievable if astronomers, observatories, journals, data centres, and the Virtual Observatory Alliance work together to overcome the hurdles.

1. All significant tables, images, and spectra published in journals should appear in astronomical data centres.
2. All data obtained with publicly-funded observatories should, after appropriate proprietary periods, be placed in the public domain.
3. In any new major astronomical construction project, the data processing, storage, migration, and management requirements should be built in at an early stage of the project plan, and costed along with other parts of the project.
4. Astronomers in all countries should have the same access to astronomical data and information.
5. Legacy astronomical data can be valuable, and high-priority legacy data should be preserved and stored in digital form in the data centres.
6. The IAU should work with other international organisations to achieve our common goals and learn from our colleagues in other fields.

Is this a pipe-dream? I think not: technical and funding issues are ever-present, but can be overcome, provided we have the agreement and will of the astronomical community. Join us at Special Session SPS6: "Astronomical Data Management" on the afternoon of Tuesday August 22, right after the Virtual Observatory Special Session. And you can join in more specialised discussion at the meetings of the Working Group for Astronomical Data (WGAD) on the afternoon of Wednesday 16 August. See you there! □

Article 2: 15-Aug-2006

An Astronomers' Data Manifesto: Journal Data

Ray Norris

When I publish data in a journal, I'd like it to be widely used and cited, and when I look up a redshift in NED or Simbad, I'd like to see all published redshifts. At present, data centres have to go through published tables by hand, and so many never make it. How to fix this? We need to define formats and metadata that are author-friendly, journal-friendly, and datacentre-friendly. Then when you submit your tables, spectra, and images to ApJ, they will automatically be transferred to the data centres, resulting both in greater punch from your science, and more citations. Impossible? Find out at Special Session SPS6: "Astronomical Data Management" on Tuesday afternoon, August 22.

Article 3: 16-Aug-2006

An Astronomers' Data Manifesto: Mining science from Archives

Ray Norris

Did you know that three times as many papers (and citations) result from data retrieved from the Hubble archive as those based on the original data? So, in principle, observatories can quadruple their science by making their archive data public. Try telling that to a politician concerned with bangs-per-buck. It may not be news. All DECD science ministers have signed a principle, which says that all publicly-funded data should be placed in the public domain. And at the last IAU GA in Sydney, we all voted to support a resolution urging our publicly-funded observatories to do so. So why are most archive data (with some notable exceptions) still hidden from the bright light of the internet? Funding? Or poor systems to access them cost-effectively? If we want to maximise our science per dollar, we need to find better ways of doing this. Join the search at Special Session SPS6: "Astronomical Data Management" on Tuesday afternoon, August 22.

Article 4: 17-Aug-2006

An Astronomers' Data Manifesto: data needs for new telescopes

Ray Norris

How often do you hear an enthusiastic discussion proposing a new telescope? And how often do they discuss data management? Sadly, not enough. Typically, half the cost of a modern ground-based telescope is in the software and data processing. These need to be planned and developed at the same time as the hardware, rather than leaving it to grad students to figure out when the data arrive. This may seem obvious, especially to those major projects that already routinely follow this practice. However, some projects have not shown such foresight, resulting in instruments which perform well technically, but which have not delivered the expected science. We astronomers need to get our act together and think about these issues before, rather than after, the telescope is funded and built. Find out how at Special Session SPS6: "Astronomical Data Management" on Tuesday afternoon, August 22.

Article 5: 18 August 2006

An Astronomers' Data Manifesto: The Digital Divide

Ray Norris

Have you heard of the Digital Divide? For some of us, accessing a journal, or downloading a Spitzer image, is only a few key-clicks away, while for others it involves getting a photocopy (remember them?) or printout from an overseas colleague. Some institutions still don't have broadband access that others have at home. But how can we astronomers solve the world's problems? There are ways. For example, some journals provide free or cheap access to our colleagues in developing countries. And some astronomers work with their colleagues in other fields to argue for funding for a connection. All these problems are soluble, provided there is the will and awareness to do so. Find out more at Special Session SPS6: "Astronomical Data Management" on Tuesday afternoon, August 22.

Article 6: 21-Aug-2006

An Astronomers' Data Manifesto:

Safeguarding legacy data

Ray Norris

When our nearest and best-studied supernova exploded (SN1987A in the Magellanic Clouds) astronomers scurried to find old plates showing the host star pre-supernova. They were fortunate. The plates still existed, kept carefully in plate libraries, and our knowledge of supernova astrophysics is now that much richer. Supposing it happened now? Most plate libraries have been closed, and now the plates gather dust in some storage room, undigitised, inaccessible, and deteriorating. But not all old plates are worth keeping. How do we choose which data should be preserved, digitised, and migrated into data centres? And how can we fund it? And what about your 9-track tapes, Exabytes, CD-ROMs, DVDs? Will they be readable in 50 years time? Find out at Special Session SPS6: "Astronomical Data Management" on Tuesday afternoon, August 22.