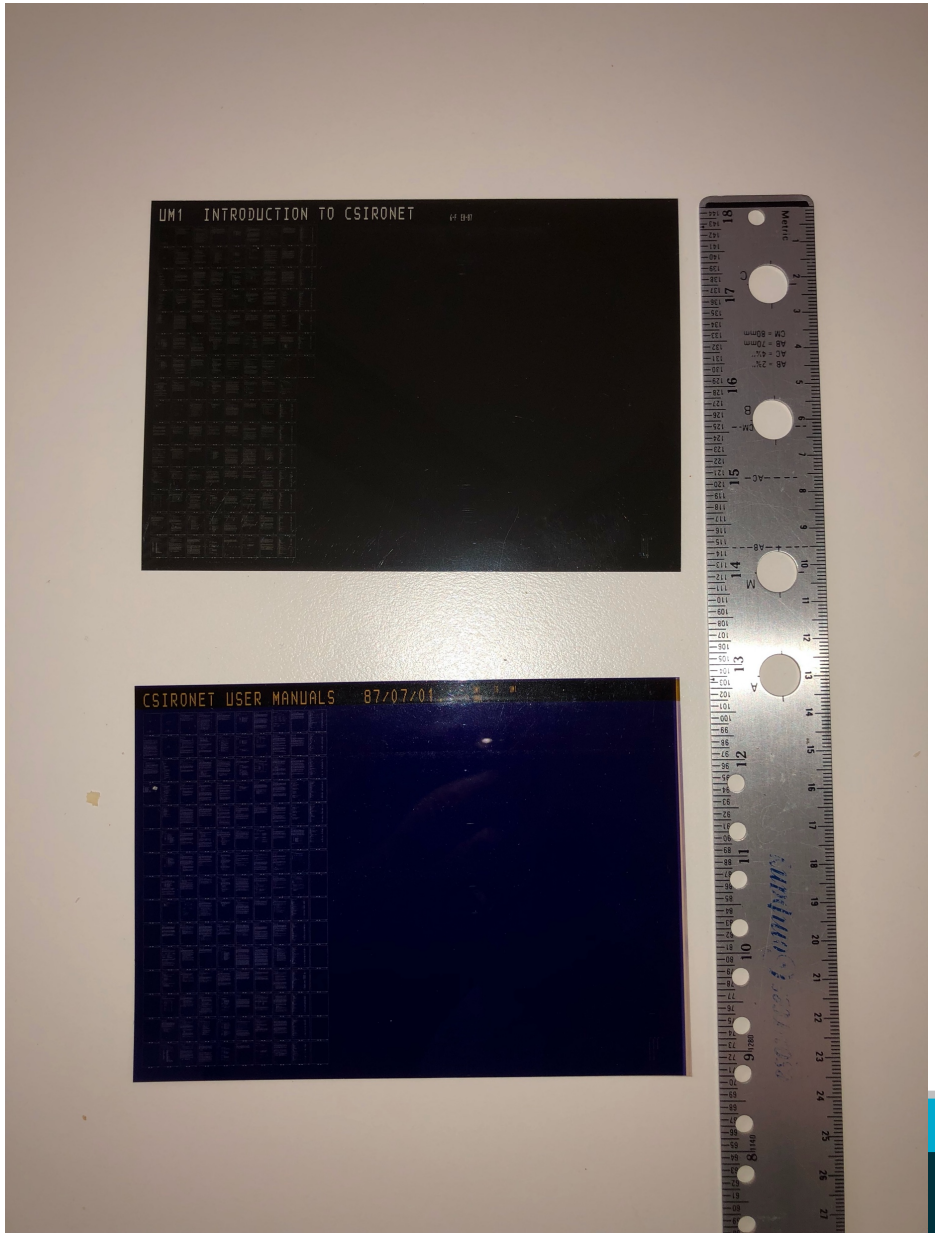
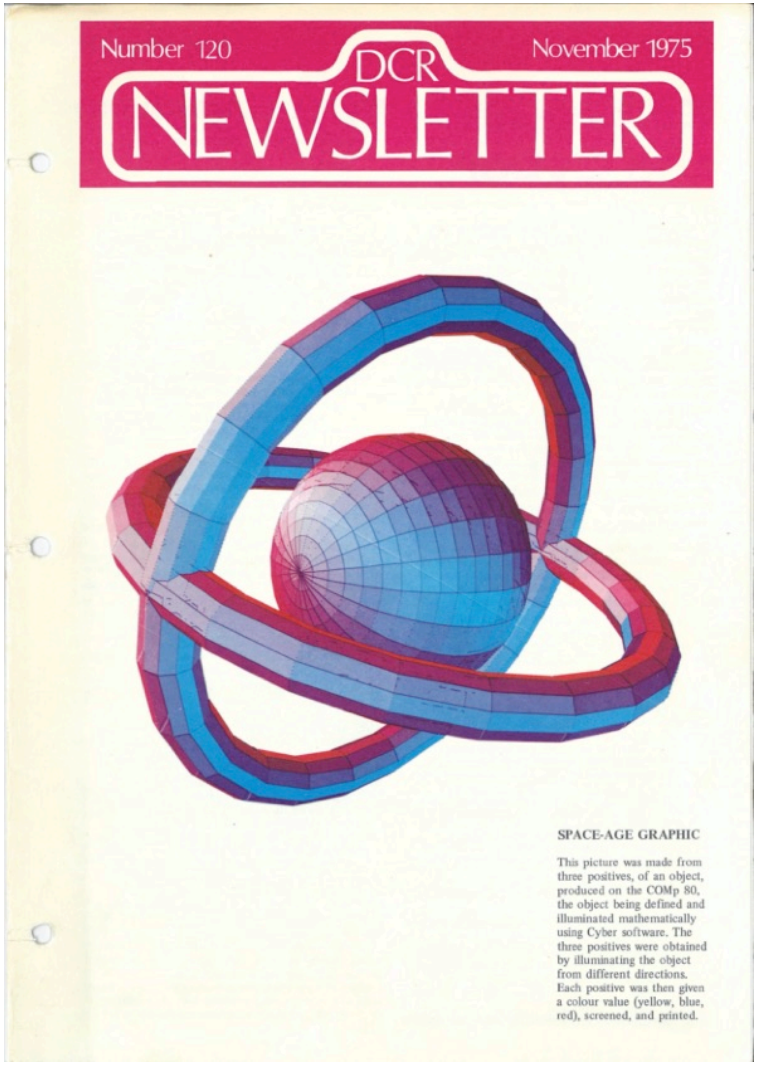
# Theme 4: Printing and microfiche

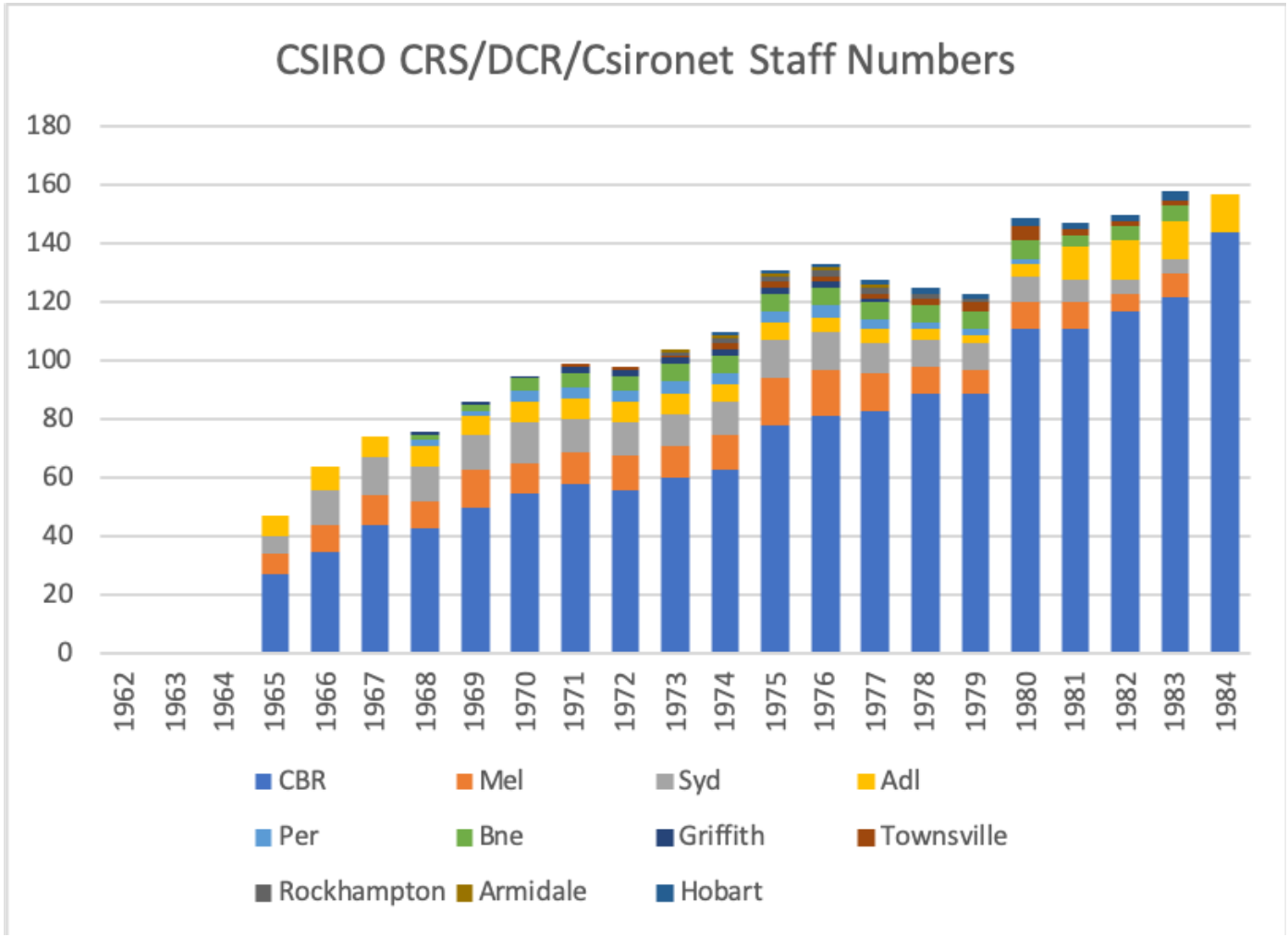
- Jan/Feb 1975 Newsletter announced “COM Unit is Ordered” – installed in July
- The COMp 80 provided output to microfilm, microfiche, 35 mm film and bromides.
- Microfiche became the default way to store large amounts of output for Csironet users.
- Sep 1976 DCR Newsletter: about 100,000 pages were being printed on the CSIRO network in prime shift, and as many as 40,000 outside that.
  - Totals about 56 boxes of paper per day, or about a tonne!
  - It was hoped to save a lot of money and forests with microfiche
  - 420 A4 pages, 280 11” x 15” per fiche
  - Ideal for documentation – users could have the complete documentation on their desk with viewer


UM1 INTRODUCTION TO CSIRONET
CSIRONET USER MANUALS 87/07/01


Number 120
DCR
NEWSLETTER
November 1975
SPACE-AGE GRAPHIC
This picture was made from three positives, of an object, produced on the COMp 80, the object being defined and illuminated mathematically using Cyber software. The three positives were obtained by illuminating the object from different directions. Each positive was then given a colour value (yellow, blue, red), screened, and printed.

# Theme 5: The growth of the service

- Power of systems
- Network
- Storage
- Range of applications
- Range of users
- Distributed computing
- Users
- Documentation
- Newsletters
- Regional Computing Committees
- Staff


CSIRO CRS/DCR/Csironet Staff Numbers
180
160
140
120
100
80
60
40
20
0
1962
1963
1964
1965
1966
1967
1968
1969
1970
1971
1972
1973
1974
1975
1976
1977
1978
1979
1980
1981
1982
1983
1984
CBR
Mel
Syd
Adl
Per
Bne
Griffith
Townsville
Rockhampton
Armidale
Hobart

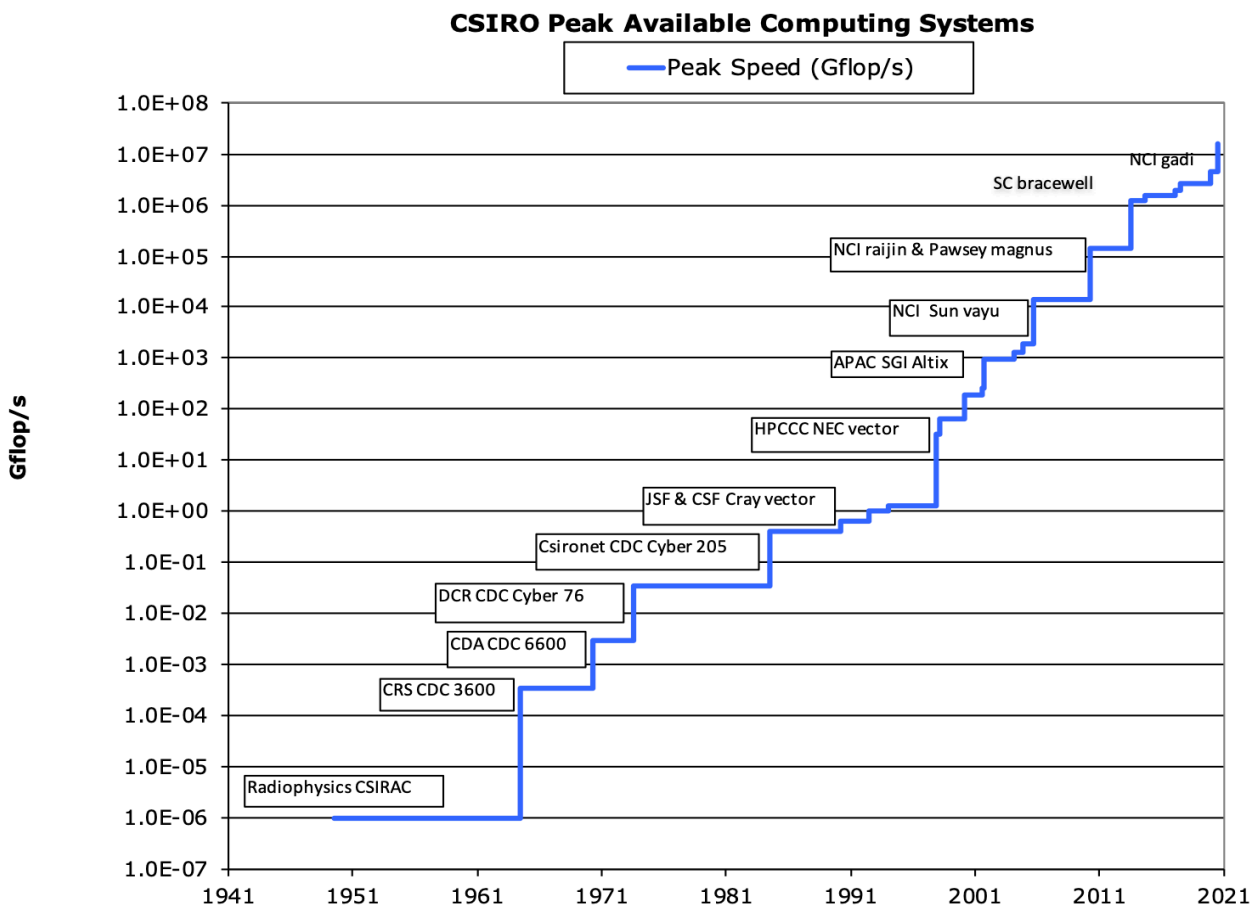
# Theme 6: The policy framework

- Charging by usage!
  - Started with just computing time: then storage, then everything had a cost – printing, transmission, tape mounting
  - 100-page charges document!
- Flight to minicomputers, and later, PCs
  - Led to underutilisation
  - Led to higher charging rates to cover fixed costs
- Requirement to service the needs of Government Departments
  - commercial systems (FACOMs) in the 1980s
- CSIRO was unable/unwilling to break out of the fee for service model
- Csironet was privatised in late 1980s
- CSIRO then acquired its own systems – enterprise and scientific
- Set up new ‘science’ service from 1990 with a Cray Y-MP and Supercomputing Support Group

# Theme 7: The lessons

- Innovation!
- Resource allocation vs charging vs share model is crucial
  - Drawbacks to free-for-all – waste, contention, queuing
  - Drawbacks of charging – inhibiting science, under-utilisation, fragmentation
  - Share model from 1990 – share of system proportional to contributions
- Always pressure on storage!  Critical for users.
- Csironet perhaps missed the PC revolution
  - Most CSIRO Divisions had minicomputers
  - Flight from central computing services (now called the cloud)
- Privatisation led to death:
  - R&D and new services declined
  - Marketing increased
  - Common belief that if we have a big machine, industry will flock to use it (Csironet, ACCI, QSL, ANSTO, LET, SRF, xPACs)

# 8. Trends: CSIRO: 13 orders of magnitude increase in peak available computing speed

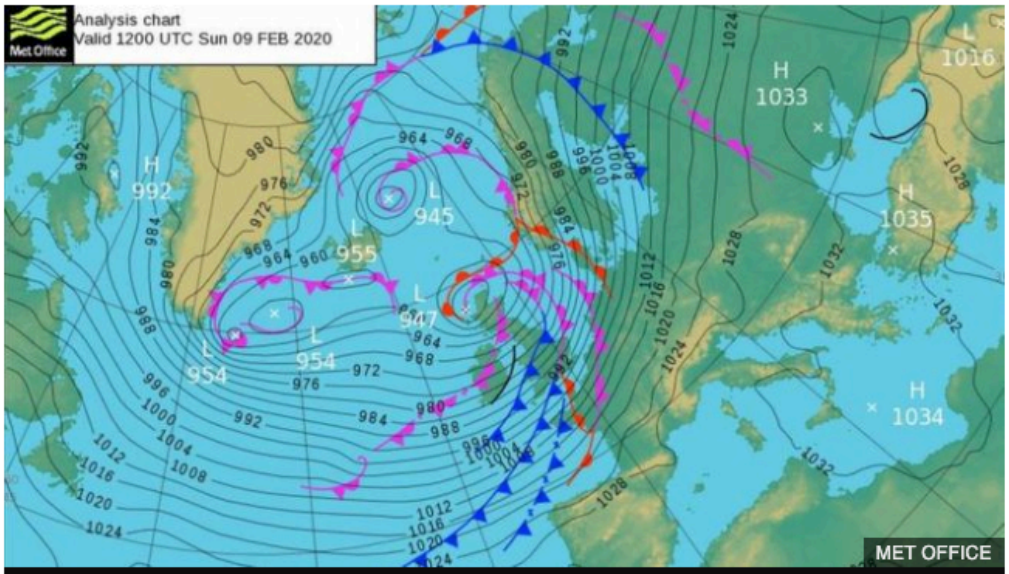


# Big machines for big challenges

## Met Office forecasters set for 'billion pound' supercomputer

By David Shukman
Science editor

17 February 2020 | Share




Storm Ciara and Storm Dennis have both caused widespread wind and flooding damage

# Thank you

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