Multifrequency Observations of the Blazar 3C 279 centered on an INTEGRAL ToO Pointing in 2006

(Poster at 6th INTEGRAL Workshop)

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Outline

1) June 2003 campaign: brief reminder

2) January 2006 campaign: first/preliminary results (results shown on poster)

The June 2003 Campaign

A multiwavelength campaign was organised around a regular INTEGRAL PI observation of 3C 279 in June 2003

Participants:

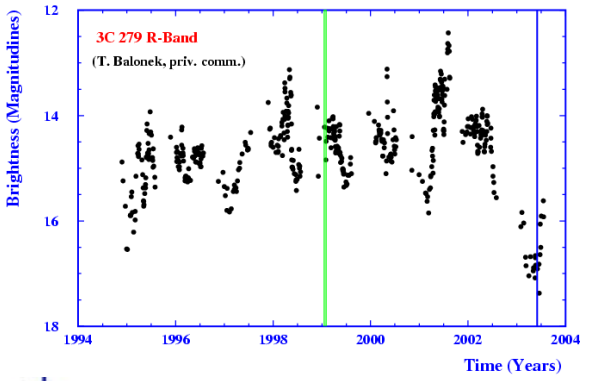
- hard X-rays:	**INTEGRAL, June 1 – 5, 2003; 300 ksec**
- X-rays:	**Chandra, June 2, 2003; 5 ksec**
- opt. & near IR:	**Siding Spring Obs. (2.3m), NOT (2.56m), Tuorla Tel. (60 cm)**
- mm & radio:	**IRAM (30m), ESO SEST, VLBA, Metsähovi Radio Tel.**

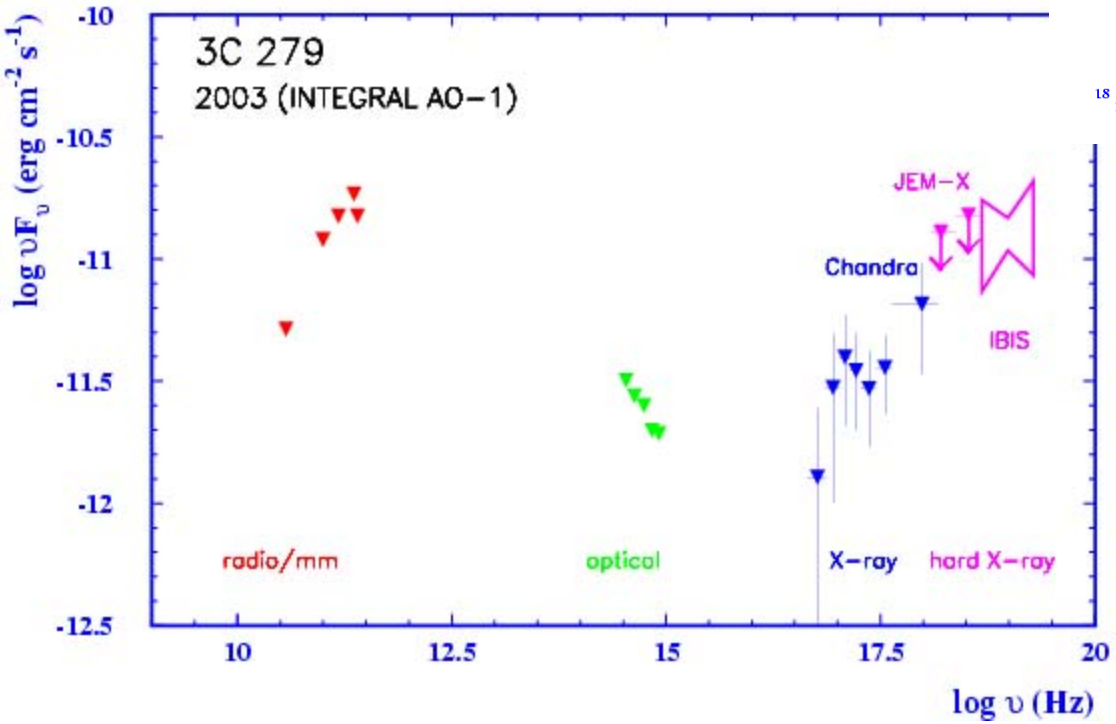
- Publ.: Collmar et al. 2004; Proc. 5th INTEGRAL Workshop

The June 2003 Campaign: MW-Spectrum

MW-spectrum during optical low-state

-> ToO proposals for high-state spectrum





The January 2006 Campaign: Collaboration

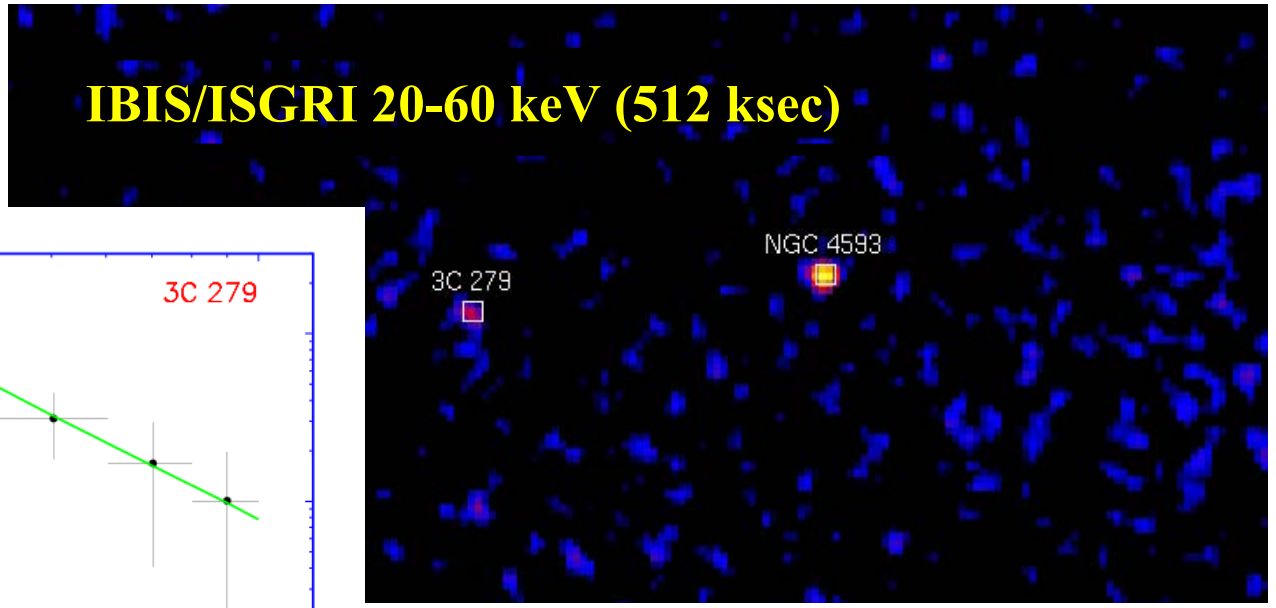
A multiwavelength campaign was organised around an INTEGRAL ToO observation of 3C 279, triggered (R < 14.5 mag) in January 2006

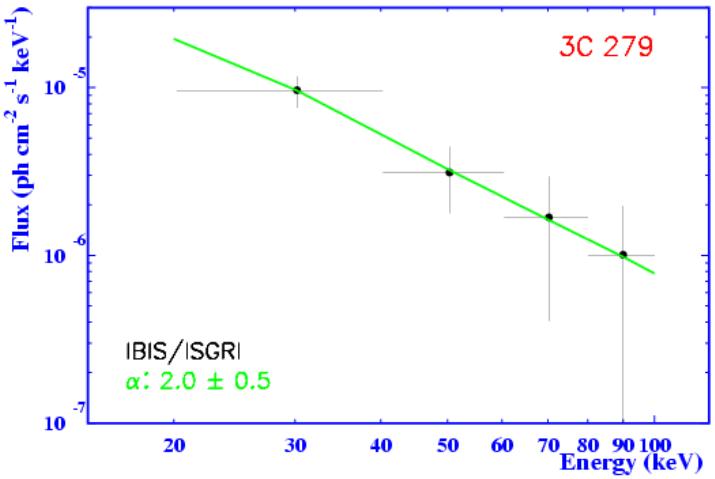
Collaboration:

- hard X-rays:	**INTEGRAL (511597 sec) Jan. 13 00:22 UT – Jan. 22 09:25 UT (including gaps)**
- X-rays:	**Chandra, Jan. 17 08:59 UT – Jan. 17 17:51 UT (30 ksec) Swift Jan 13 00:37 – Jan. 19 01:05 UT (regularly)**
- opt. & near IR:	**WEBT camp. approved (Jan. 9 – end of Feb., several WEBT collaborators participated; M. Böttcher)**
- radio - sub-mm:	**Effelsberg, Metsaehovi, IRAM, SMA**

Data analysis is still in progress (-> paper). First/preliminary results were presented on poster.

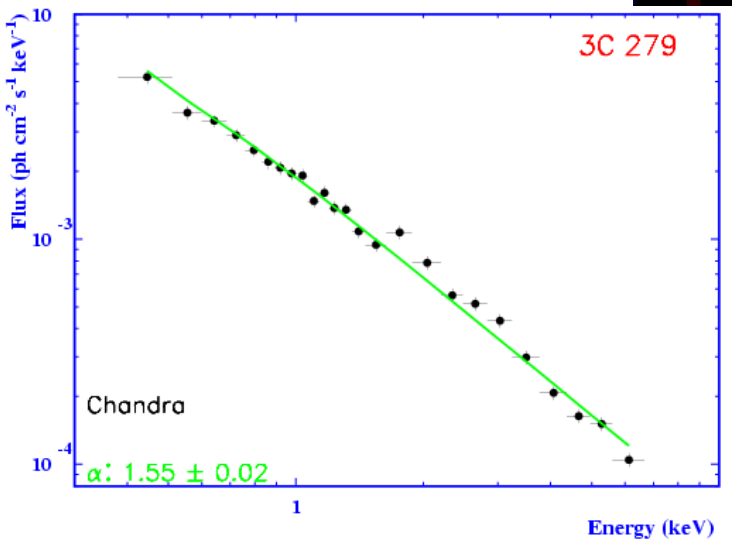
2006 Campaign: hard X-Ray/INTEGRAL

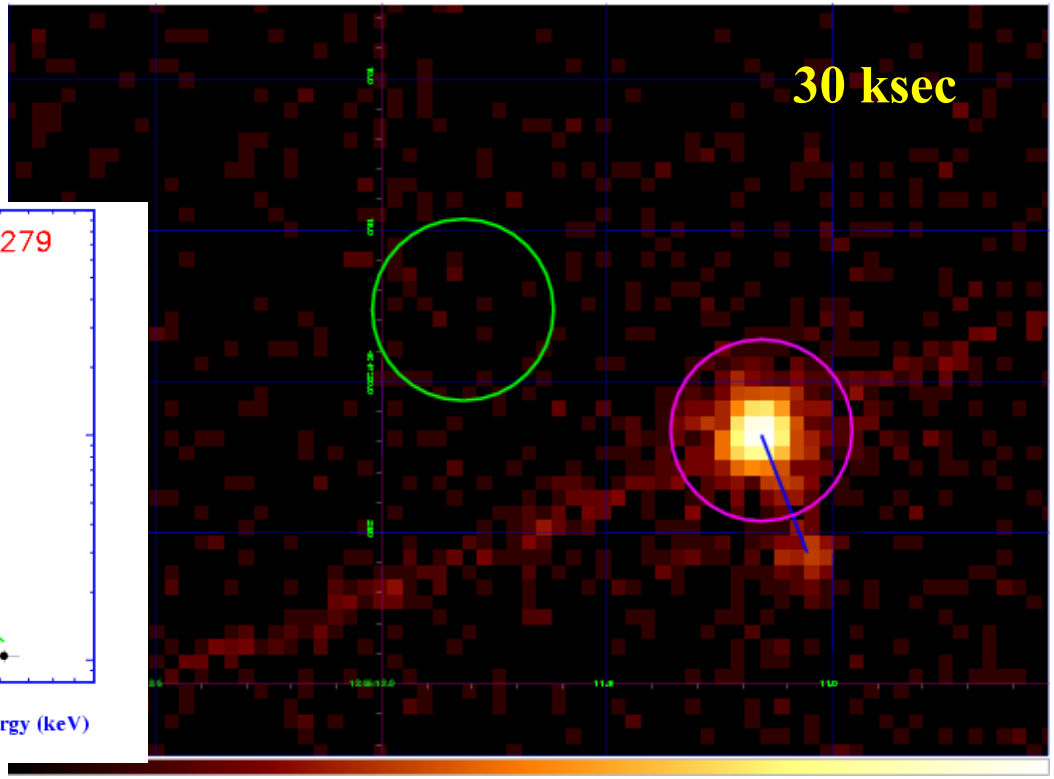




- 3C 279 detection: ~7.5σ (20-100 keV)
- IBIS/ISGRI spectrum: PL α: 2.0 ± 0.5 (20-100 keV)
  (JEM-X data not yet analysed)
- no SPI data available

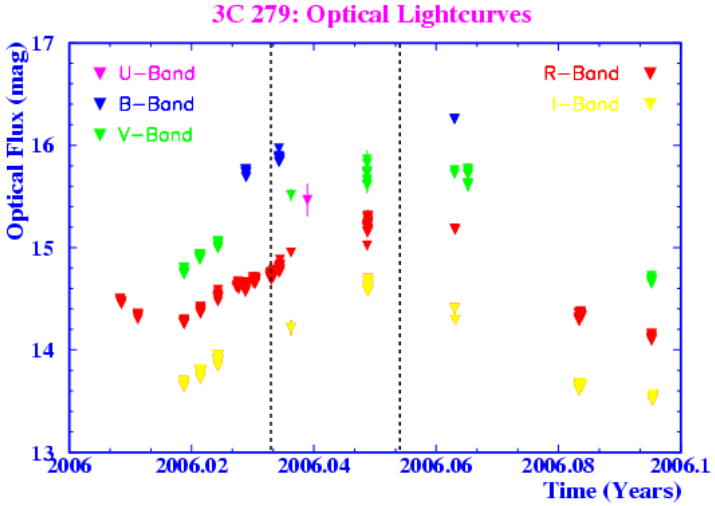
2006 Campaign: X-Ray/Chandra

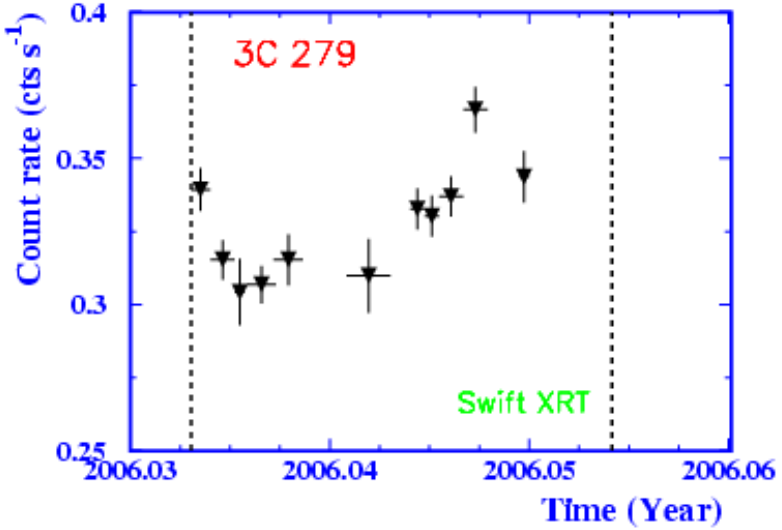


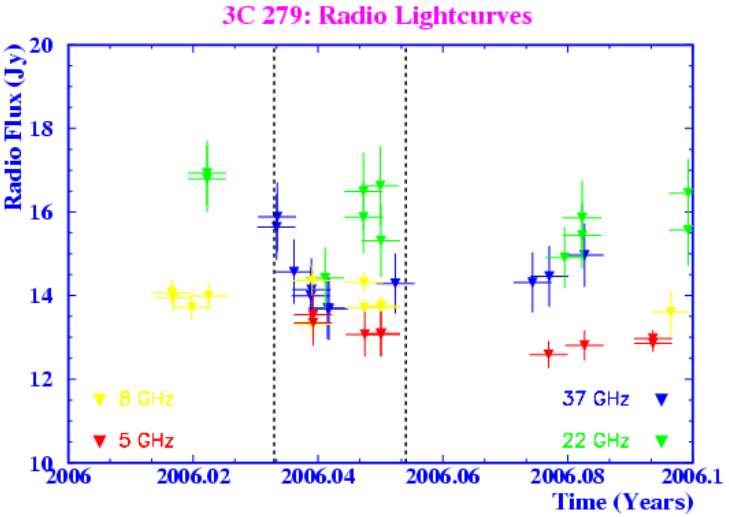


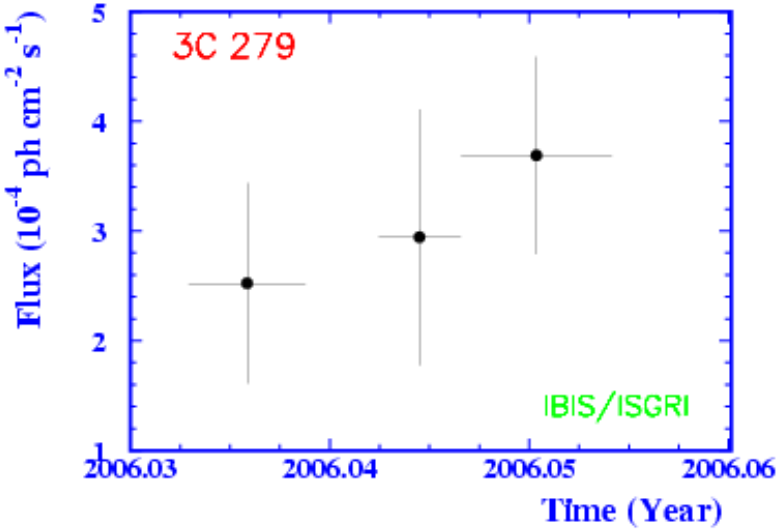
- 3C 279 + X-ray jet (?)
- circles: region used for data analysis
- spectrum (0.3-6 keV): PL α: 1.55 ± 0.02 (trend for bending)
- no variability within Chandra observation

January 2006 Campaign: Variability Results

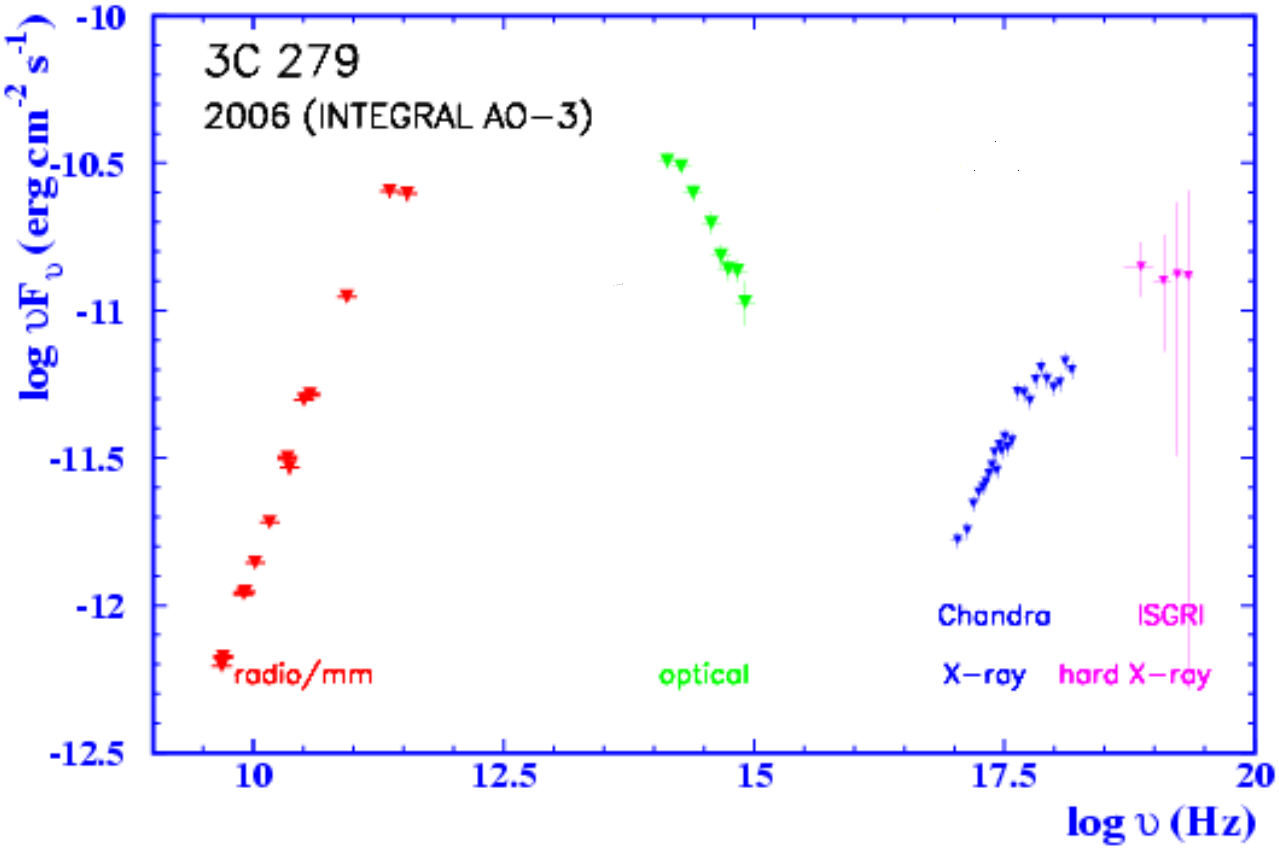






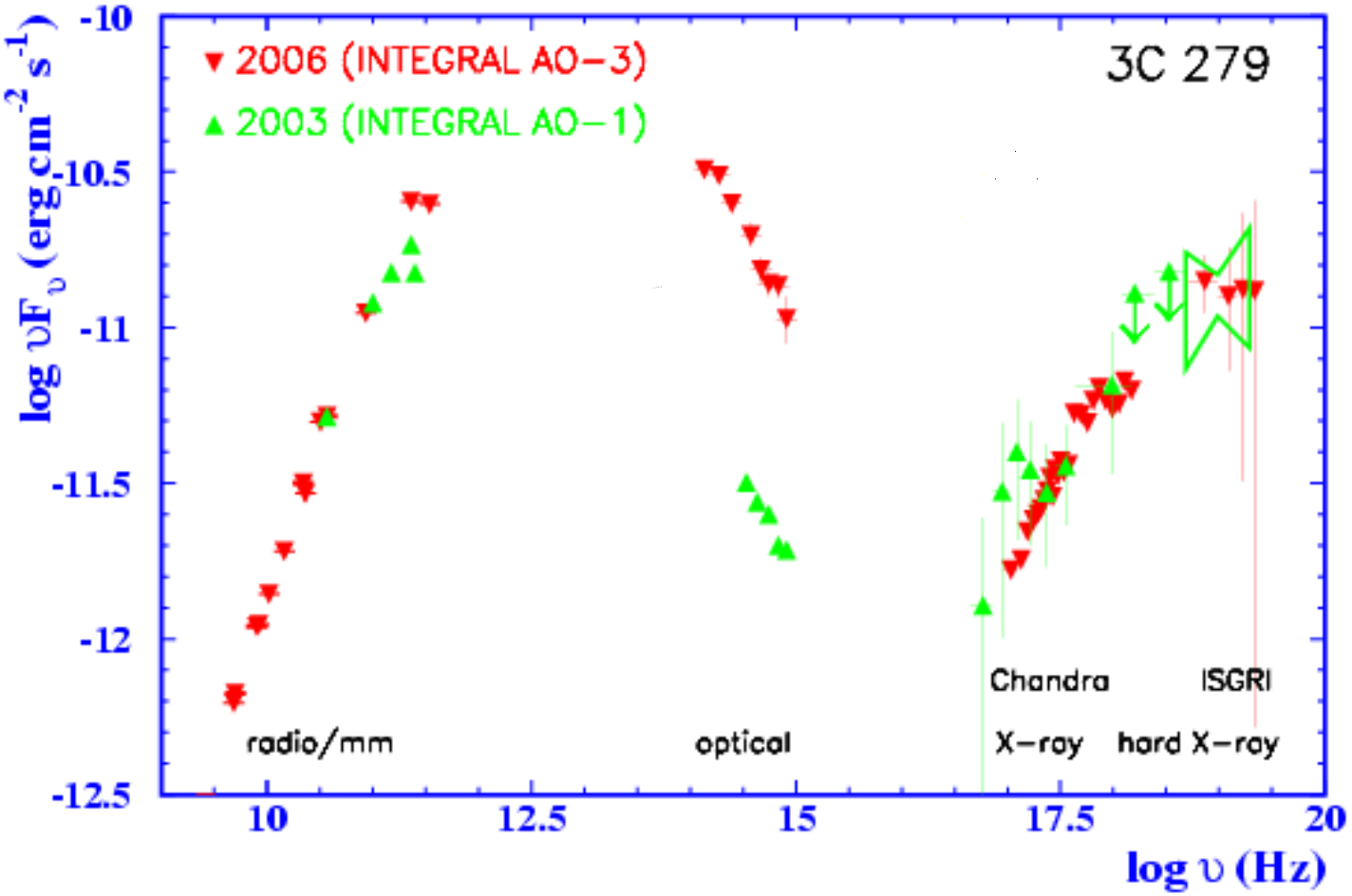


Contemporaneous MW-Spectrum Jan. 2006



- more data available (e.g. Swift)
- typical „two-hump“ shape (reasonably covered)
- deep minimum between synch. & IC (no soft X-ray excess)
- trend for spectral flattening above 20 keV

Comparison MW Spectra 2006 - 2003



- significant change in optical (IR?): no change in other bands
  -> no (simultaneous) correlation: optical and X-/hard X-ray band

January 2006 Campaign: Summary

- large MW campaign on 3C 279 in January 2006
- analyses still in progress
- 3C 279 in intermediate optical state, continously fading
  (observed: cooling off)
- MW spectrum: well-known „two-hump“ shape
- MW comparison 2003 – 2006:
  significant flux changes in optical, no spectral changes
  otherwise (in particular X- and hard X-rays)