

# BRICK + WIND = House ?



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D



# **An Introduction to Astronomical Uniqueness (Are We Unique – YES or NO?)**

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# Menu

- **What, Who, Why, Where and When**
- **Once upon a time...**
- **Per Aspera Ad Astra (to the stars through difficulties)**
- **What to do?**

# An Introduction to Astronomical Uniqueness

- An important part of understanding the likelihood of other life in the Universe is to establish the similarity, or otherwise, of our astronomical environment, which we know to support life, with that of the rest the Universe.
- Selection effect – of course!
- From ‘nothing’ to humans
- From Earth till ‘the End’
- Facts vs. Philosophy but NO Religion, Metaphysics or SETI

# Are we Unique?

## ■ SSSS

- Same?
- Similar?
- Selection effect(s) ?
- Symmetry?
- Accident – Things happens



# What, Who, Where and When

## ■ OBJECTS

- Comets – Solar System
- Extrasolar Planets
- PNe, SNRs & HI/HII regions
- Milky Way
- Local Group
- Nearby Galaxies
- Deep Field and Galaxy Clusters

## ■ FREQUENCIES

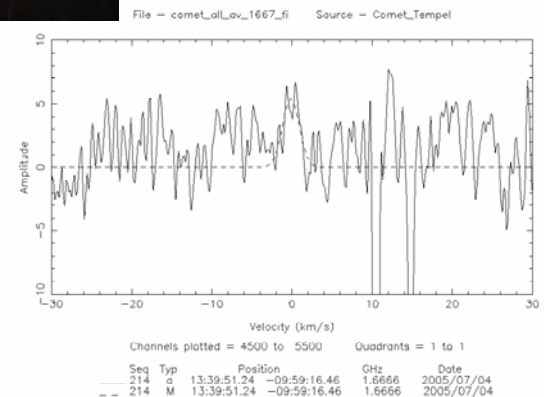
- Radio (ATCA, Parkes, VLA, Efelsberg...)
- X-ray (ROSAT, XMM, Chandra)
- Optical (AAO, Gemini, KECK, Canary Island...)
- IR (IRAS, Spitzer)

# Deep Impact

- Observations around (and outside) the World: 9P/Tempel 1 (4 July 2005)
- Well coordinated
- and Military...
- What we found
  - To know how just in case
  - Well.. Also in case that we don't need it
  - After all...Comets are not that dirty



Marginal detection of  
1667 MHz OH with Parkes

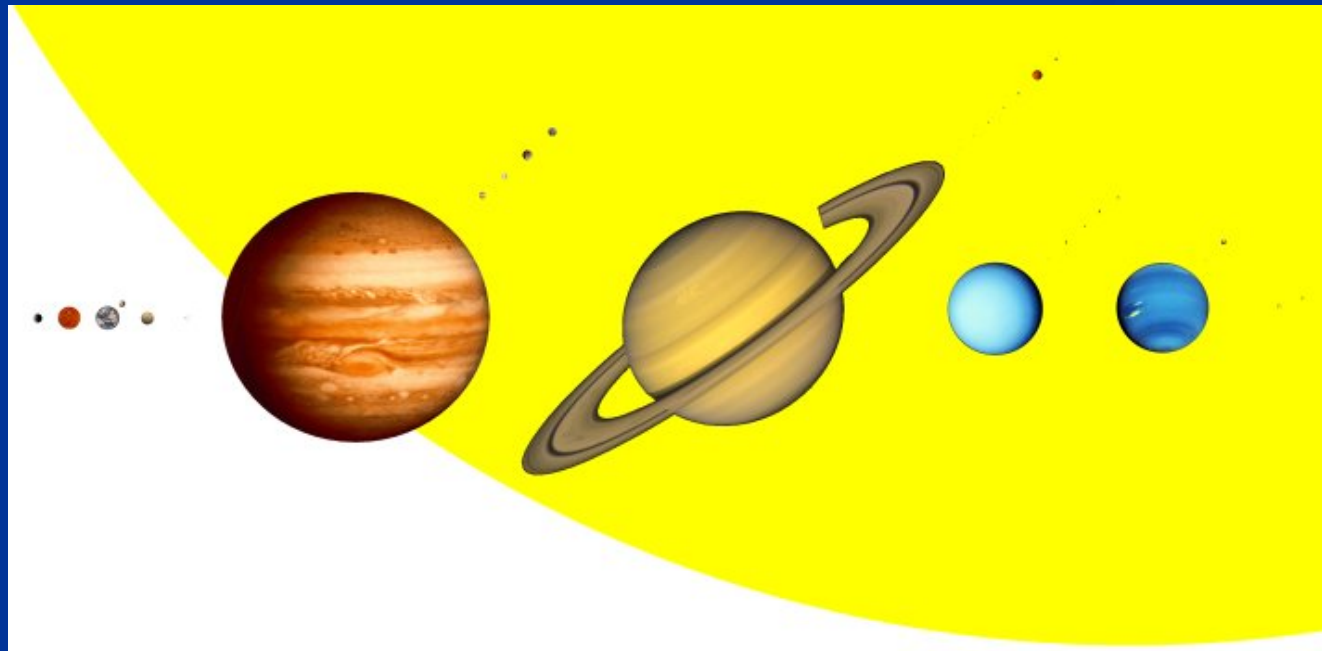


# Sun, brothers/sisters and the rest of immediate family

- Earth – Exactly here including Moon + NEO
- Influence of Jupiter – Not ASTROLOGY!  
– THANKS to BIG BROTHER

## 3 i 4 round SS league

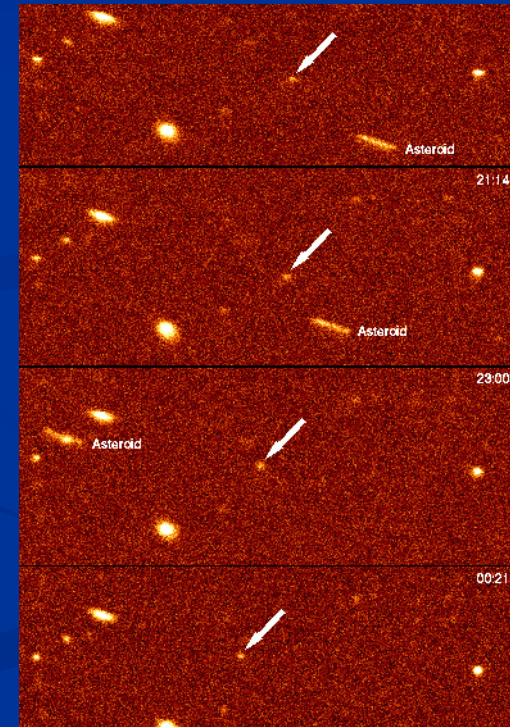
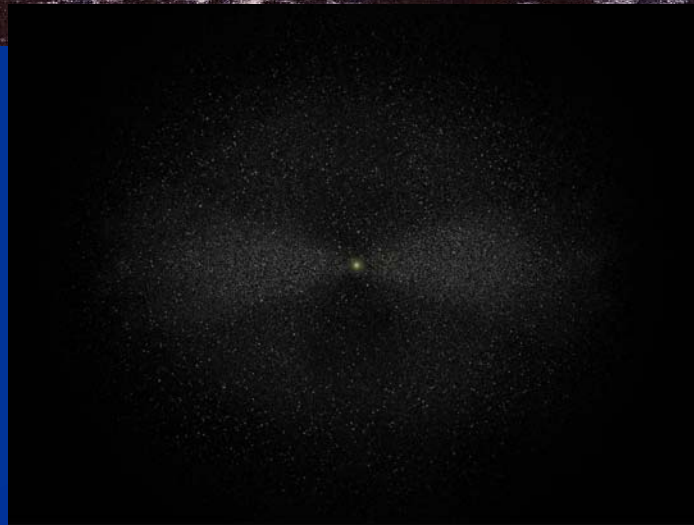
Earth vs Mars – 1  
Venus vs. Earth – 2  
Earth vs. Jupiter – x2  
Moon vs. Mercury – 2  
Jupiter vs. Saturn – x  
Pluto vs. Ganimed – 12





# Sun, brothers/sisters and the rest of immediate family

- Belts – all around us!



# Sun, brothers/sisters and the rest of immediate family

- Sun Twin (18 Scorpii, 47.5ly,  $6\times > \text{Li}$ )



- NEMESIS --- Definitely NO!!

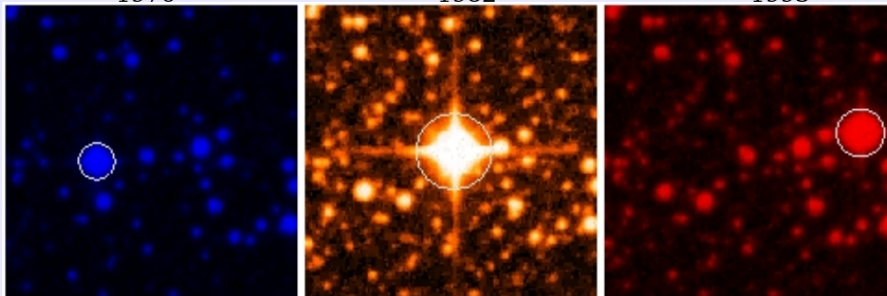
# Sun, brothers/sisters and the rest of immediate family

## Locals and mates from neighborhood

### Proxima Centauri – the next neighbour (?)

Red dwarf, spectral type: M5, distance: 1.3 pc

Three different epoch images (SuperCOSMOS Sky Surveys = SSS):  
1976 1982 1993



blue (Bj)

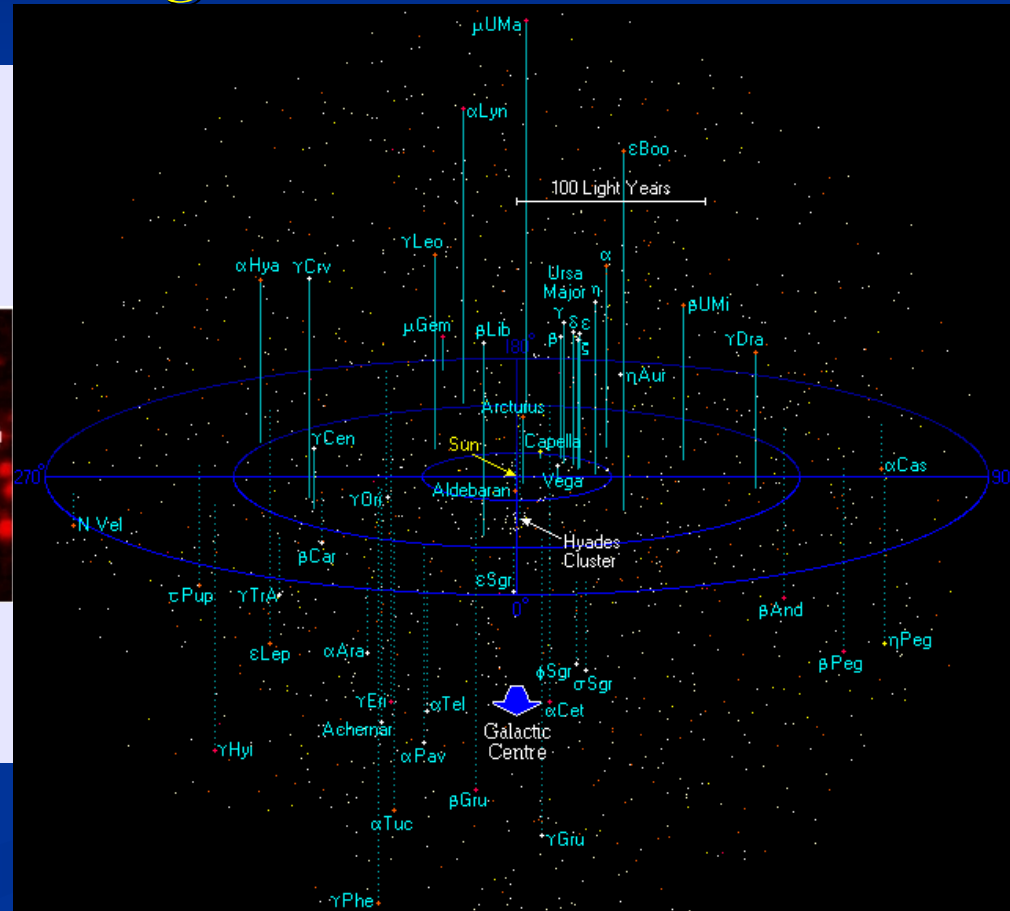
extremely red (I)

red (R)

Image sizes: 2 arcmin by 2 arcmin

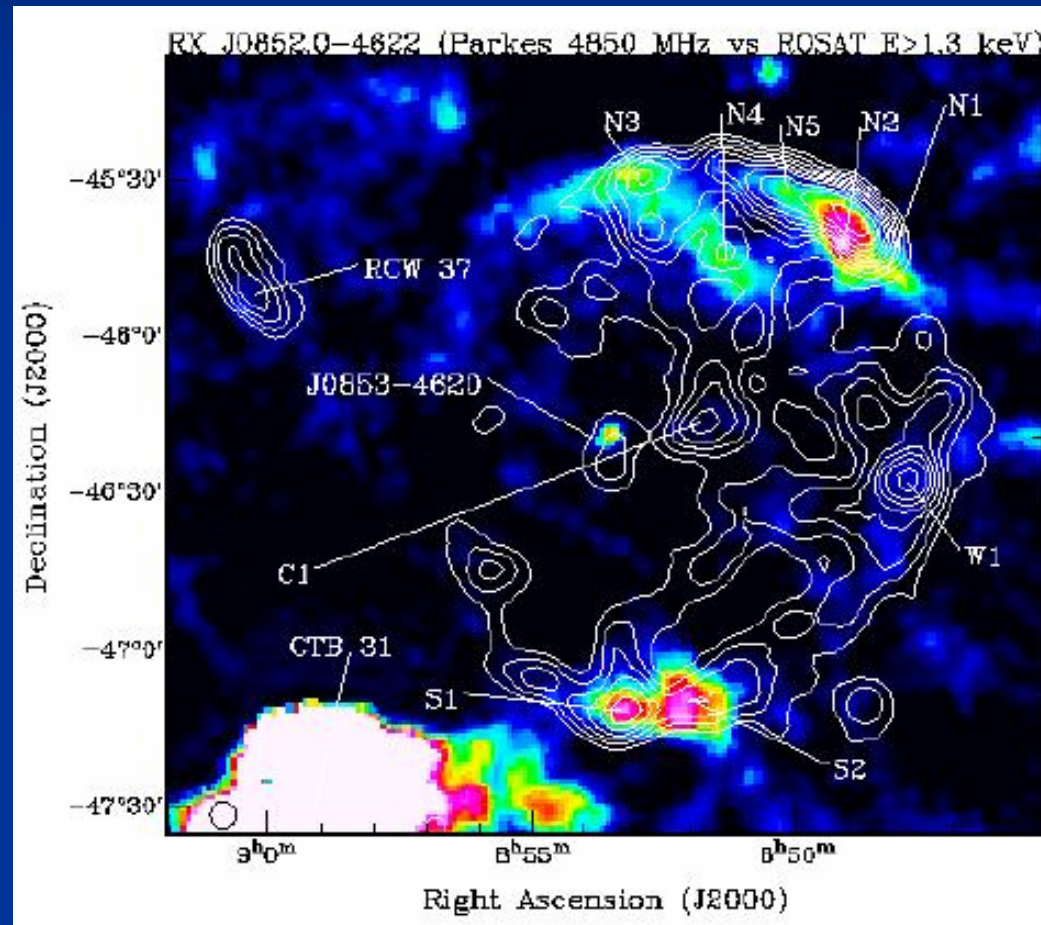
2

Proper motion: 3.9 arcsec/yr (among TOP 20 of fastest stars in the sky)



# Local Bubble SNR – Vela Z

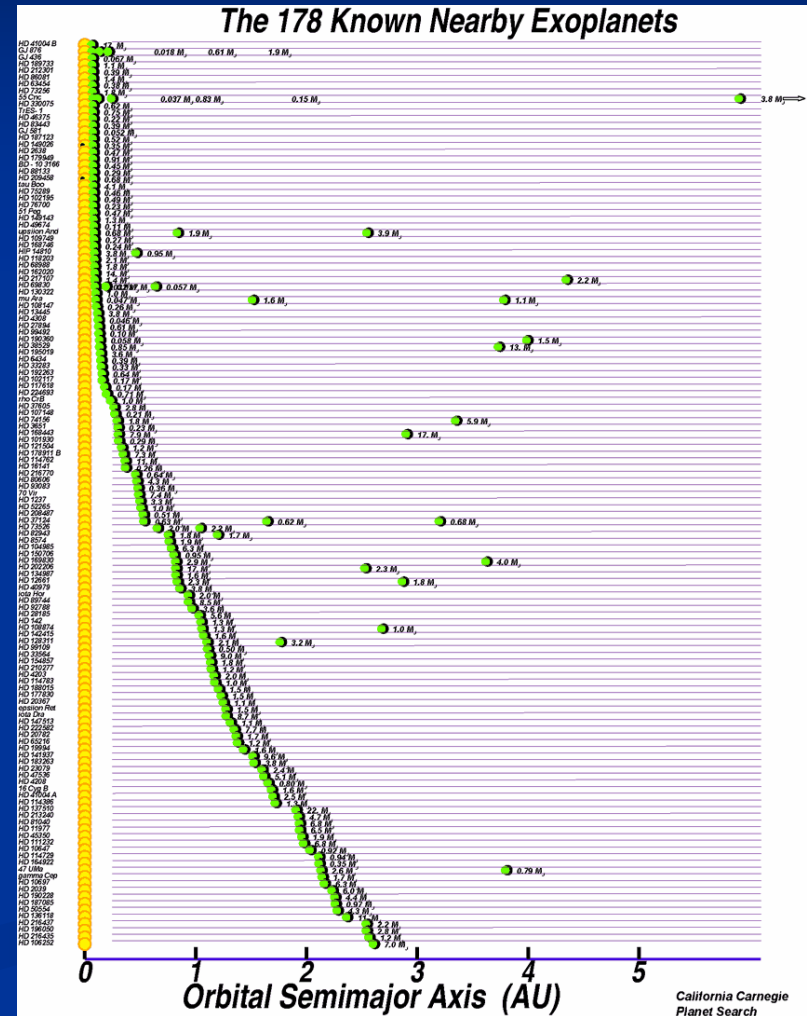
- Close -- 250pc?
- Old/Young only 650yr
- Quiet
- Strange type?



# Sun, brothers/sisters and the rest of immediate family

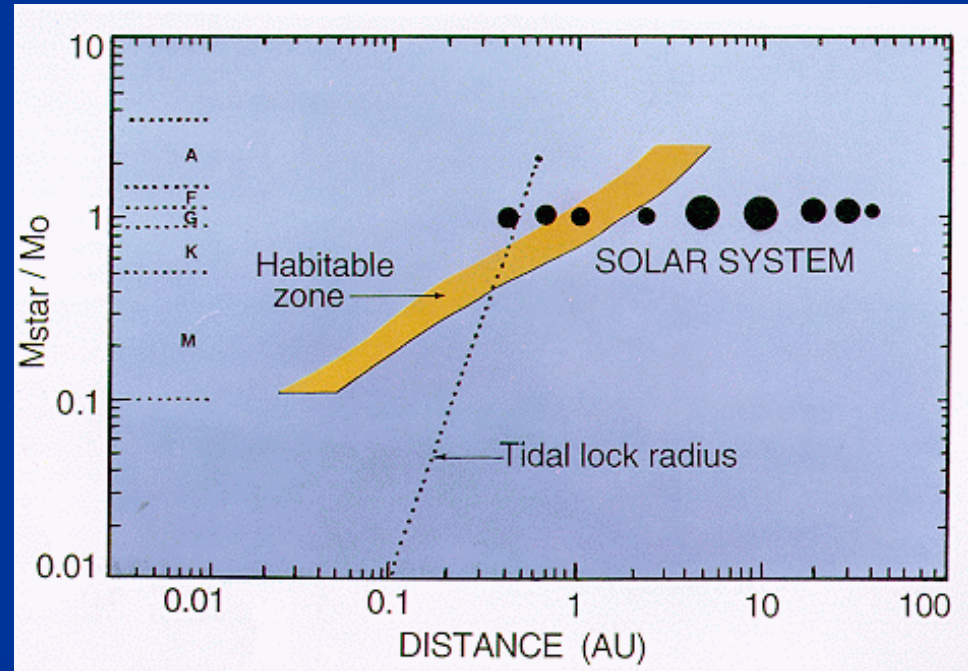
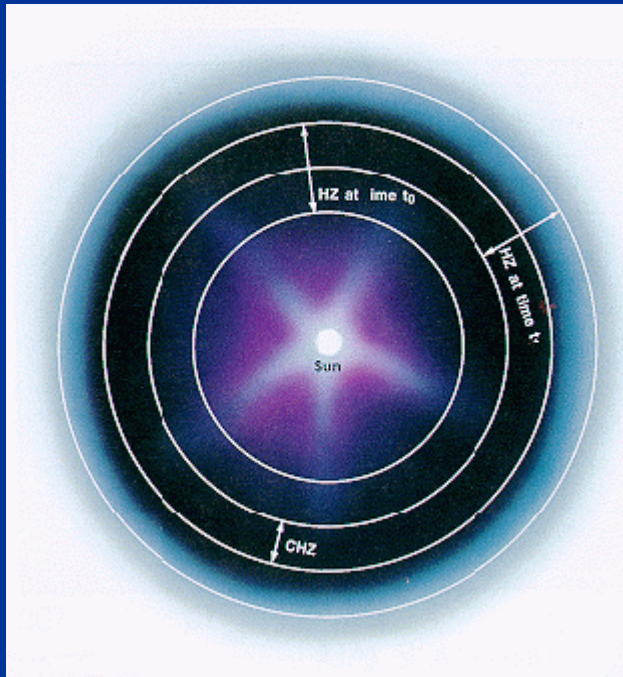
## ■ Planets outside SS

- From ~12,000 stars  
~209 – 30% (min)
- There is everything but not what we need/want?  
Hmmm... not yet?

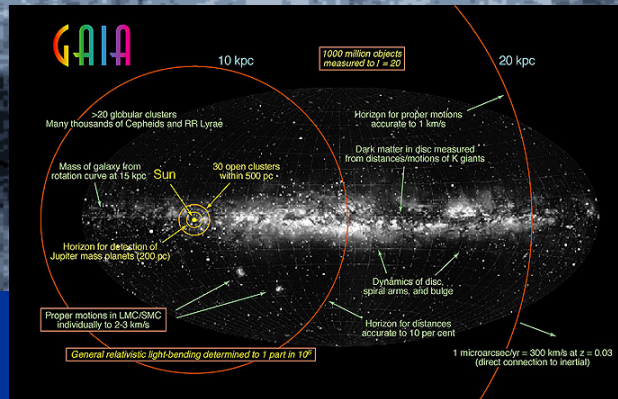
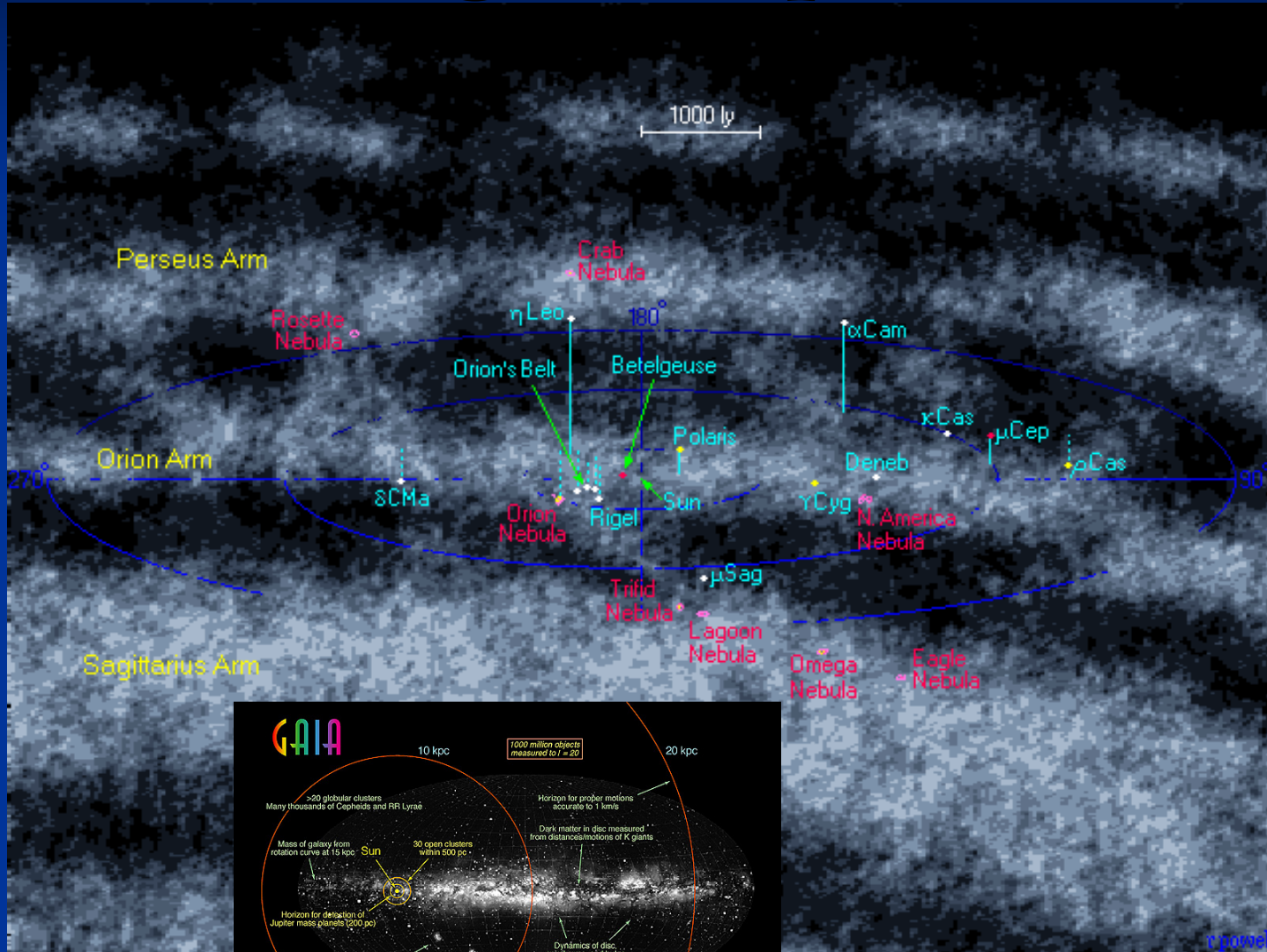


# Sun, brothers/sisters and the rest of immediate family

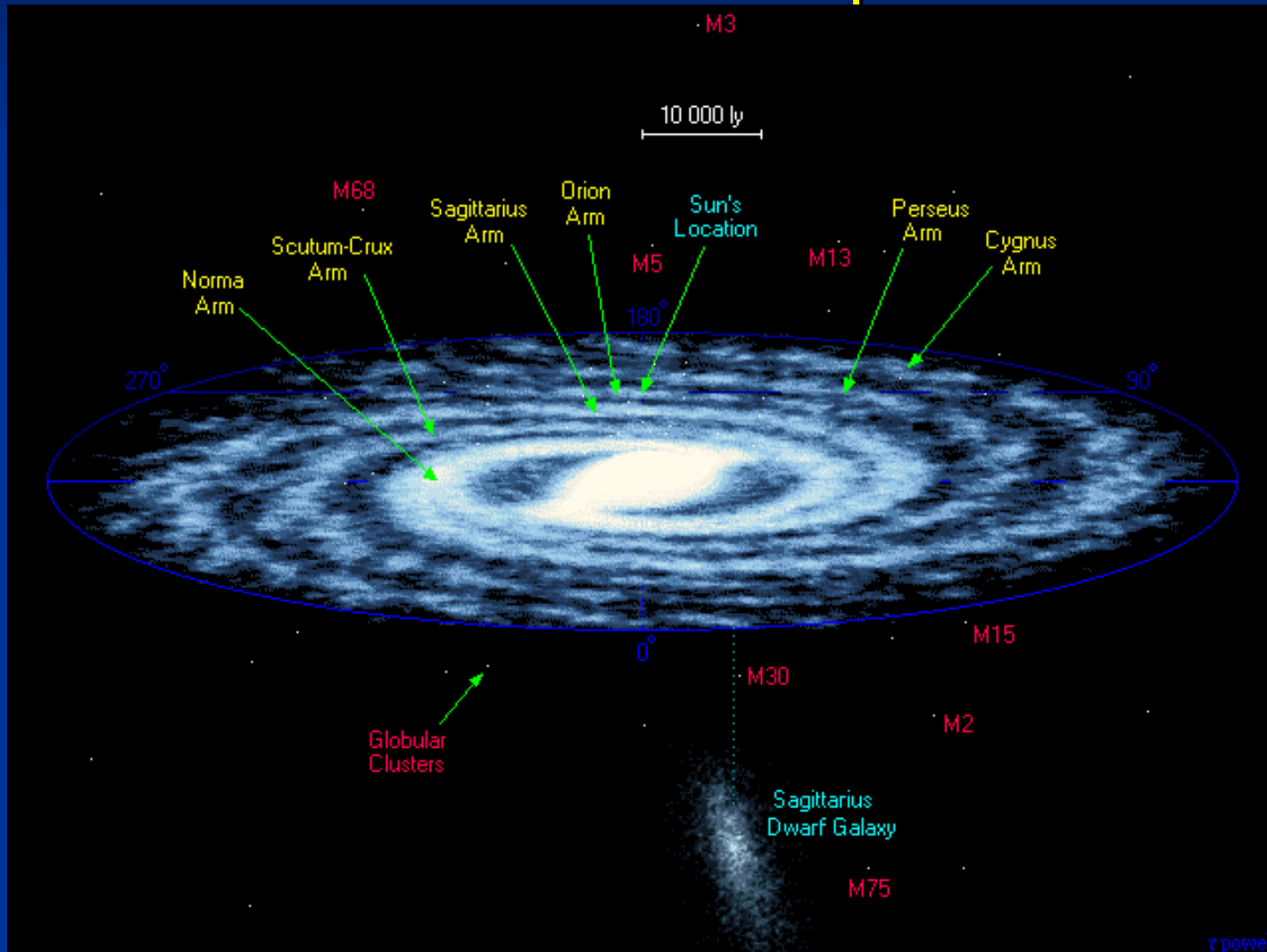
- HZ – ????????????
- Galactic archeology, biology, religion and other factories to produce apples and oranges – Epicycles?



# Our Gorgeous Spiral Arms



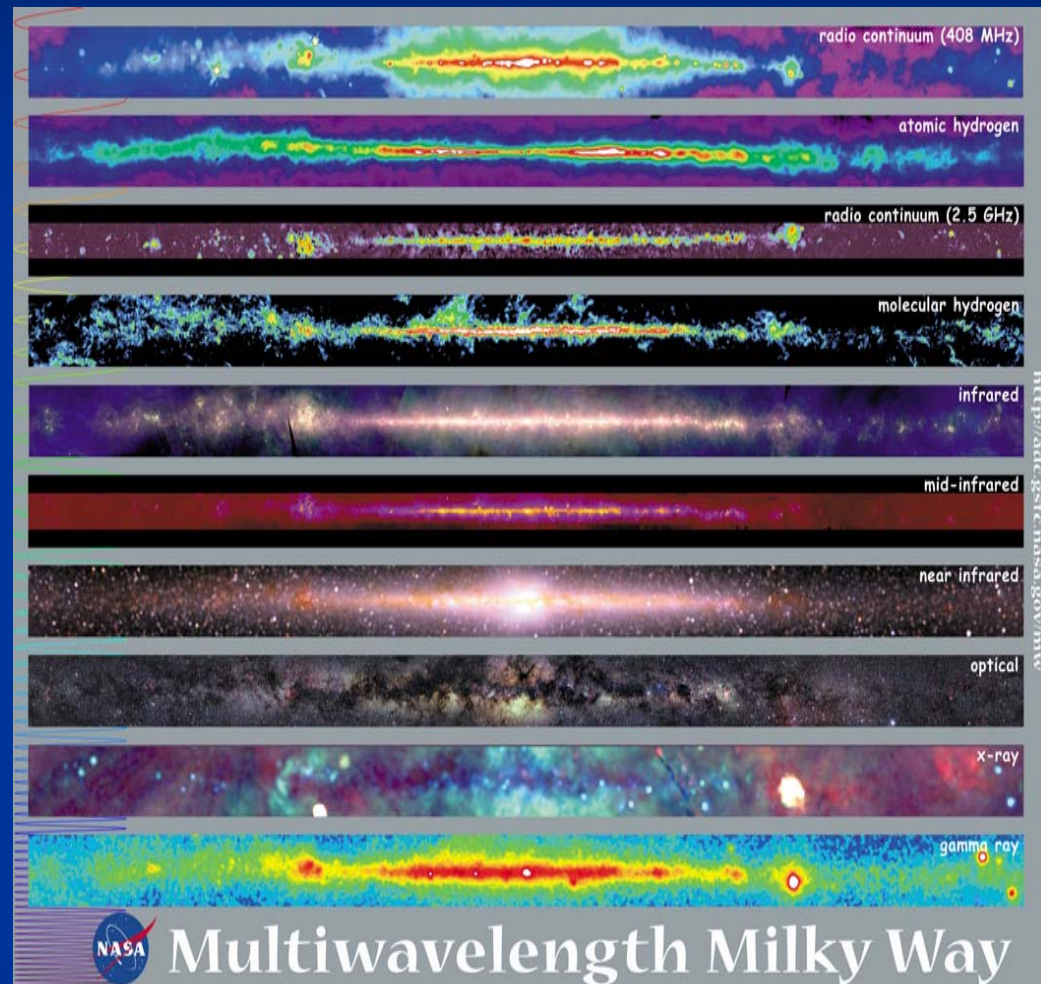
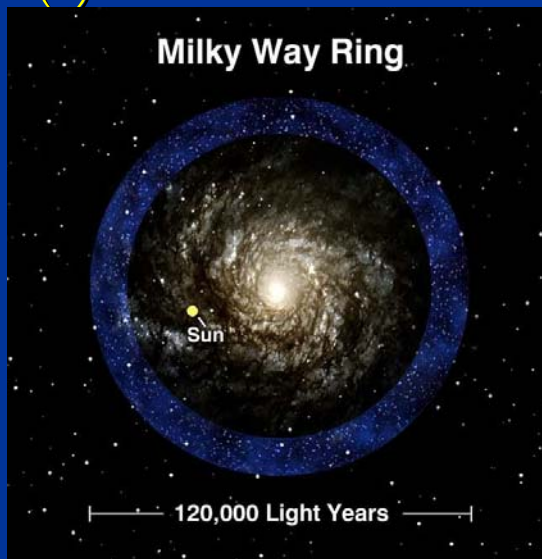
# Where and How we travel – Dinosaurs – once upon a time

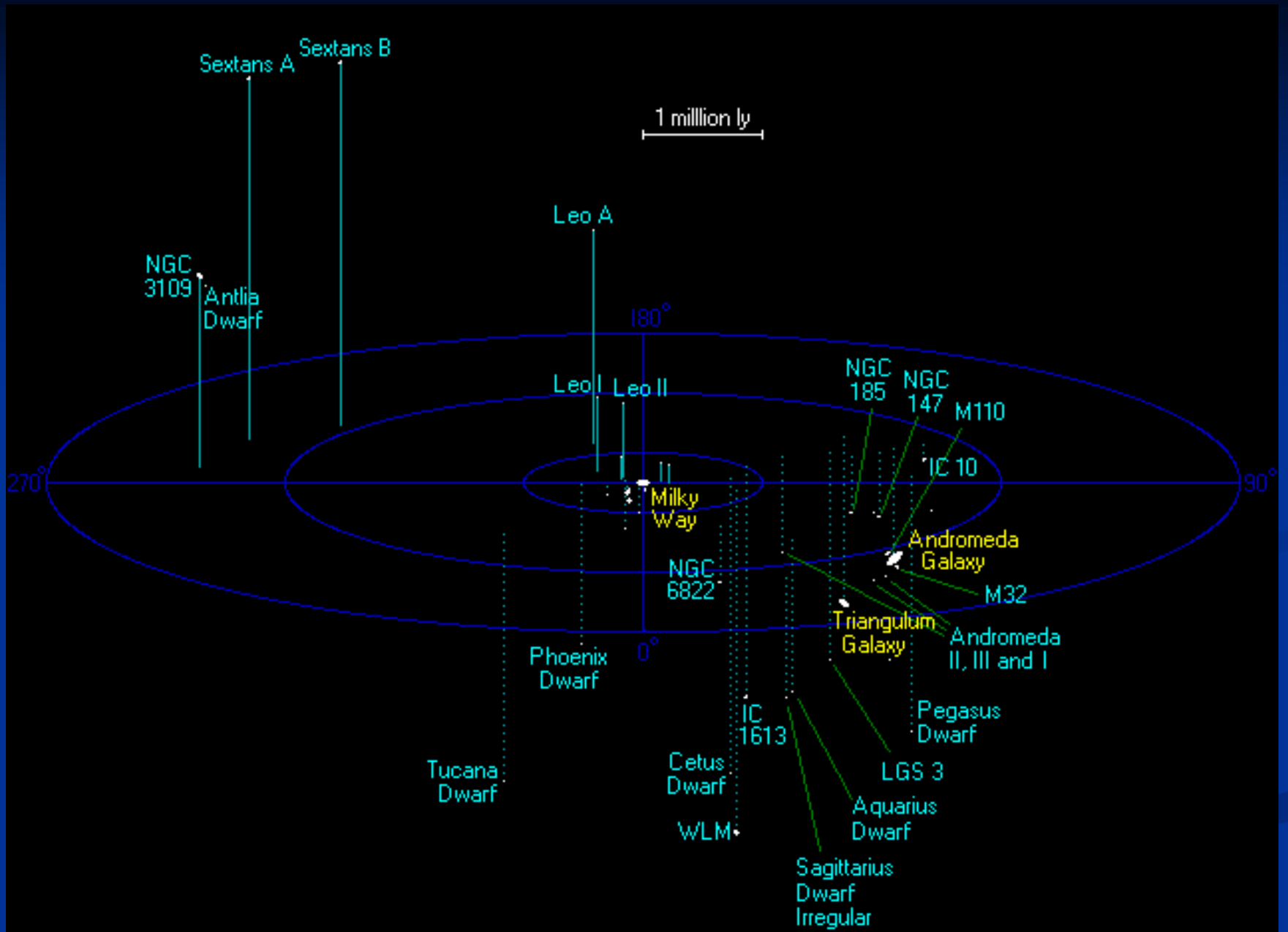




# Milky Way

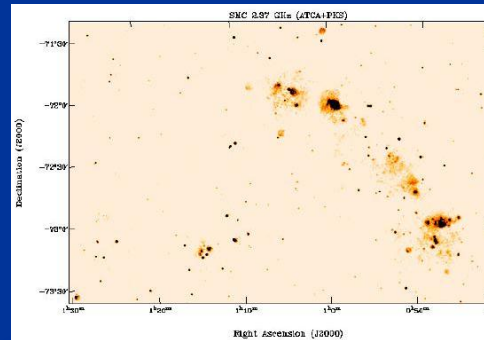
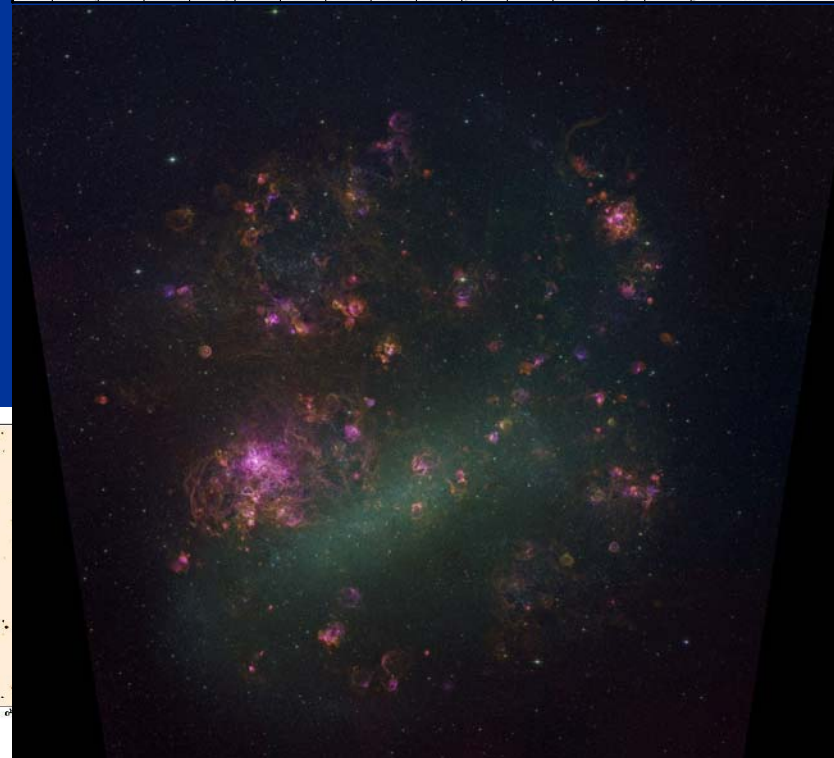
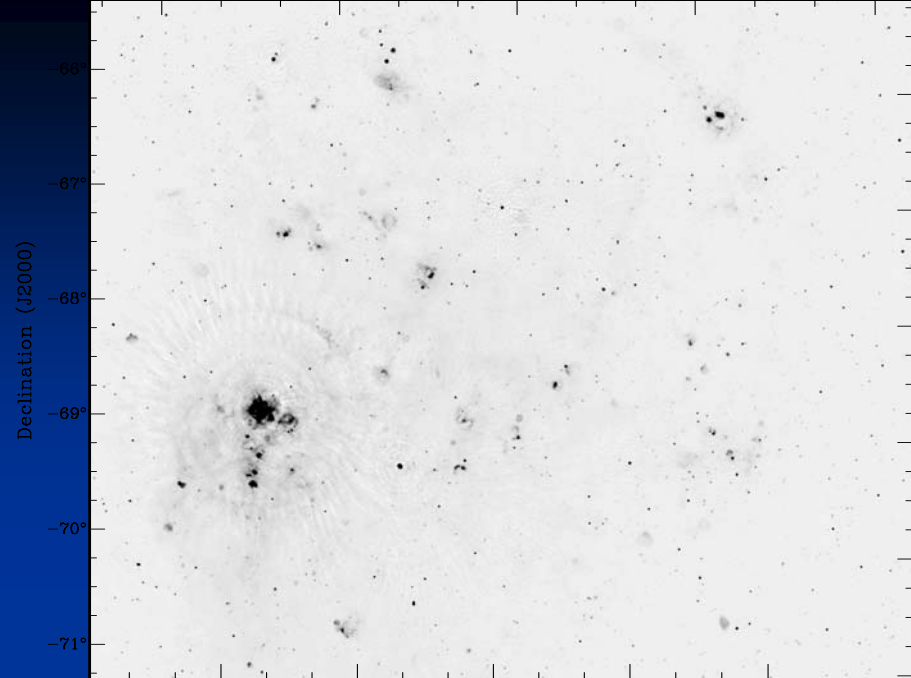
- Warps
- Holes everywhere
- Young kids everywhere
- How old are we (MW)?  
( $13,600 \pm 800$  M years)
- Anyone similar (not even close?)
- RING(s)?

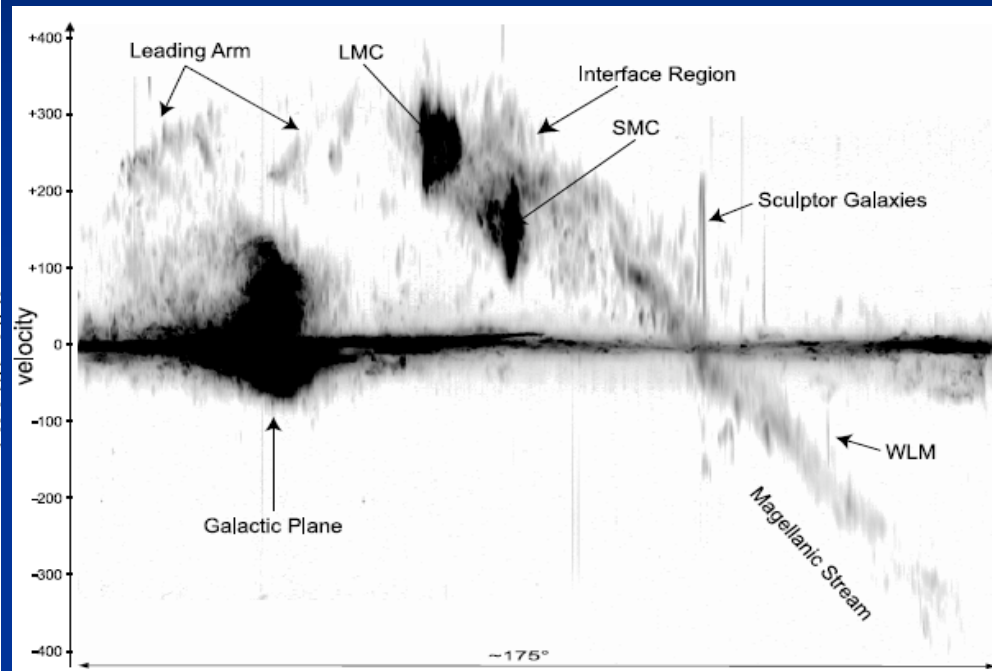
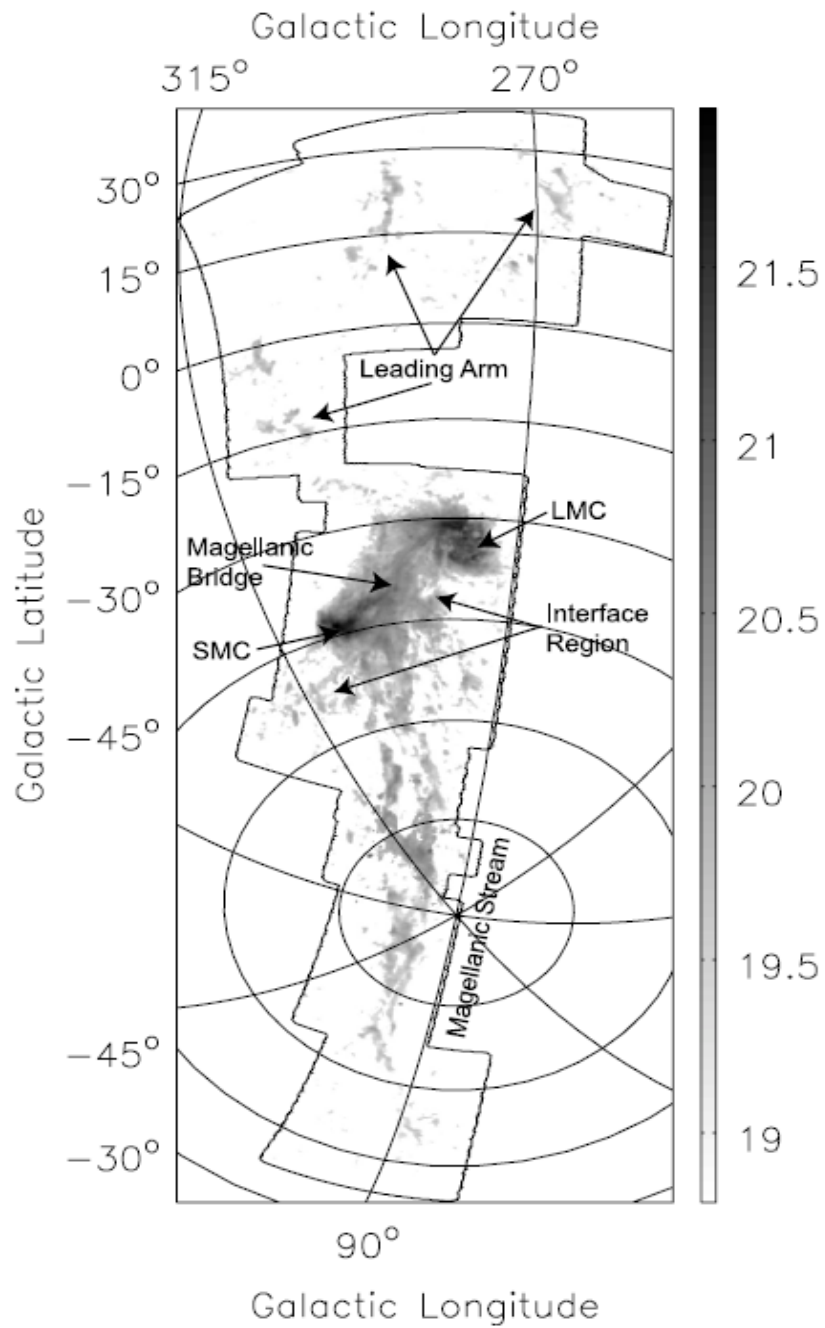


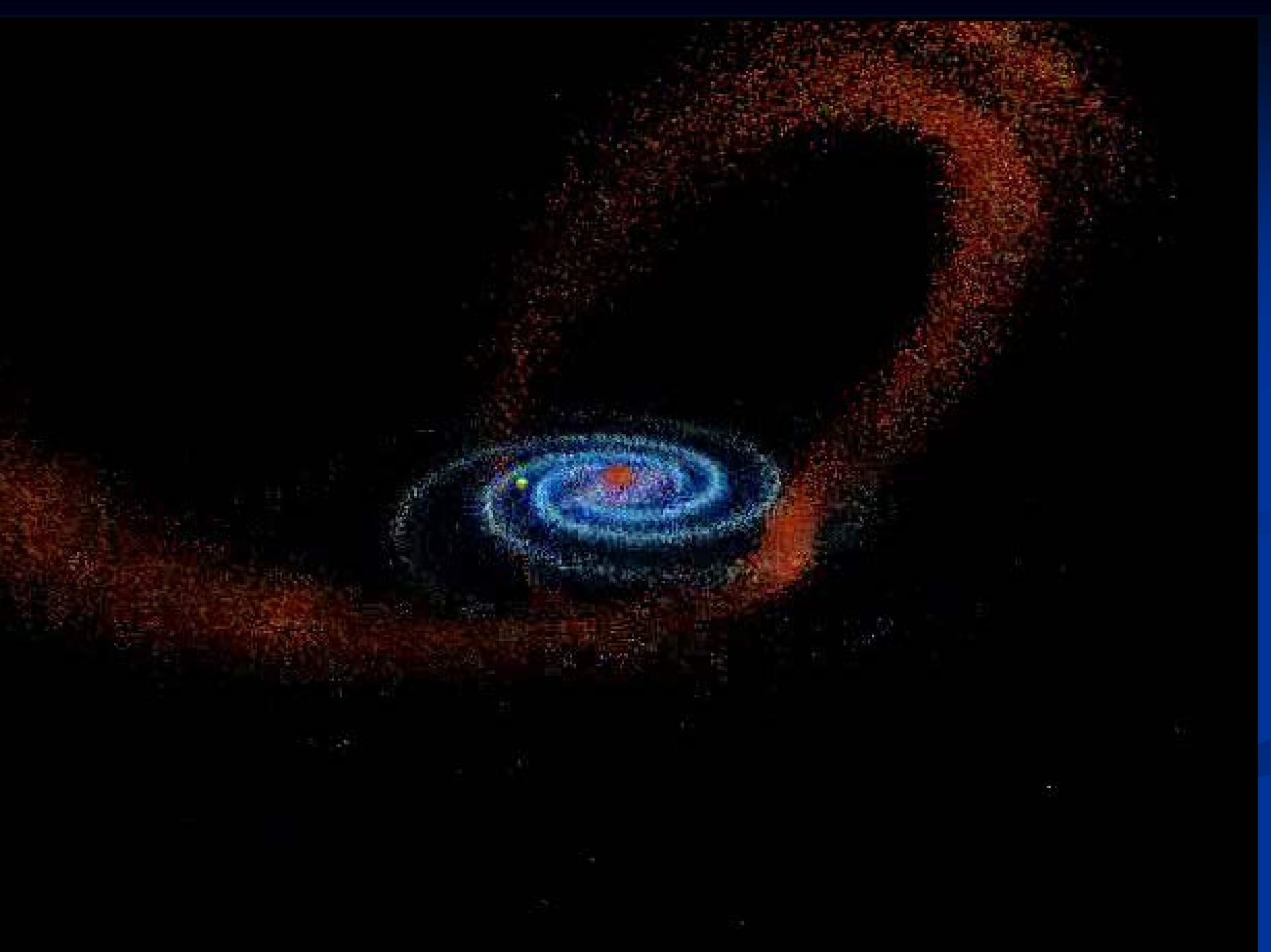


# Magellanic Clouds

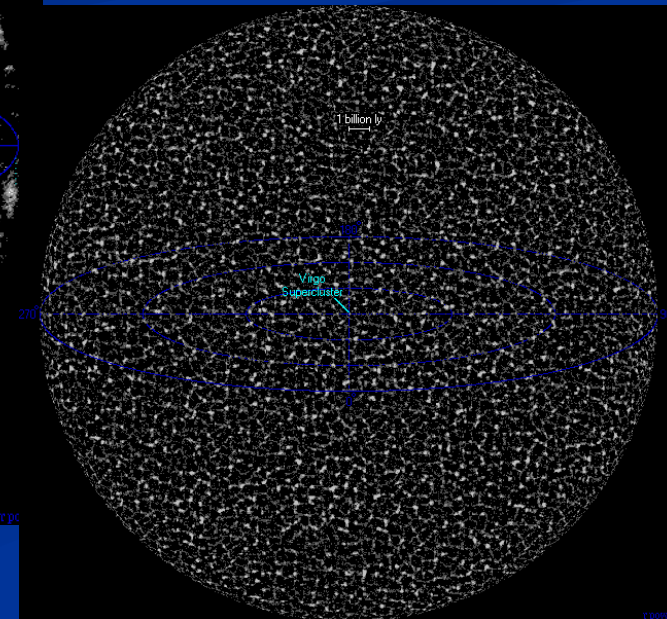
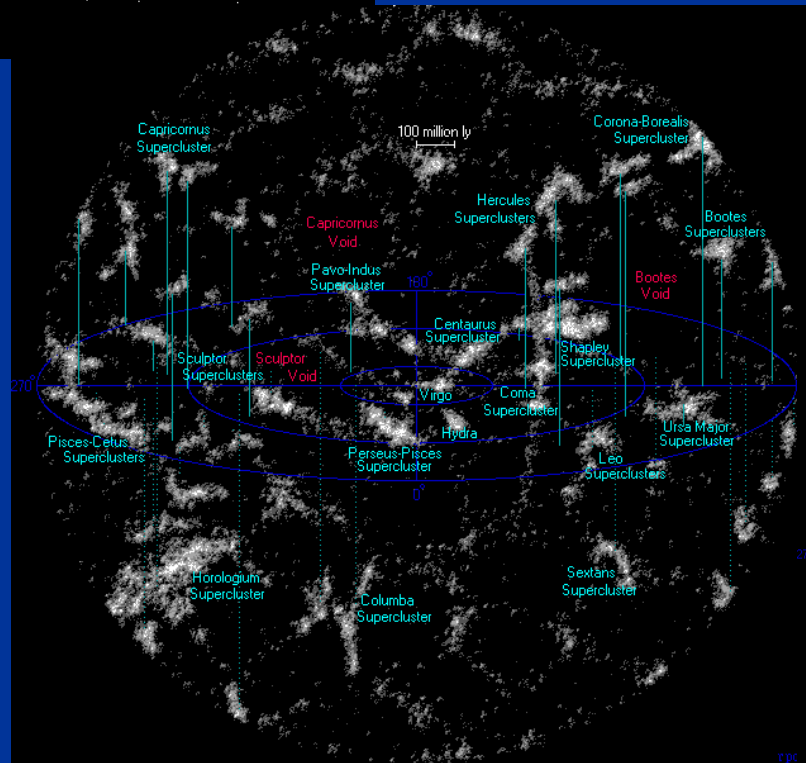
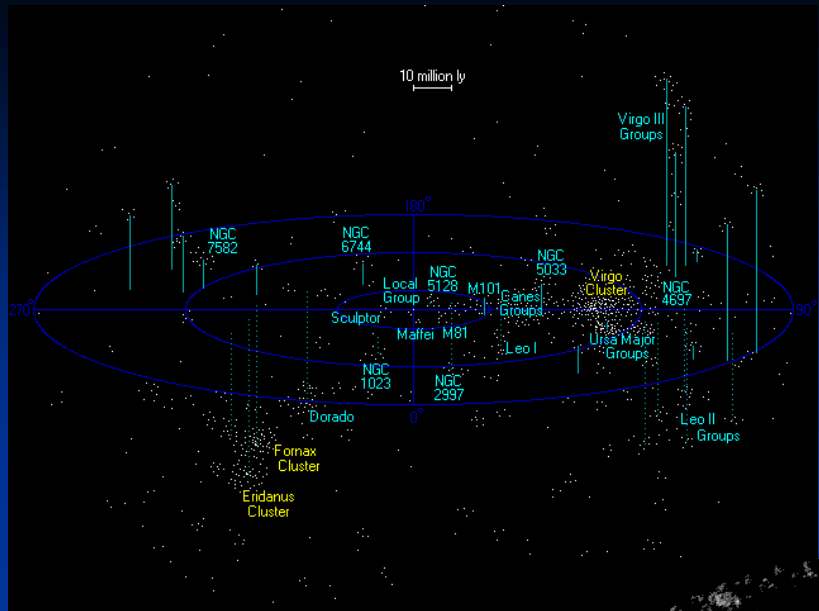
- Part of our Local Group
- Active Galaxy?
- 30 Doradus
- Objects inside are very different then in MW
- Impacts everywhere
- Bridge and Stream
- SNRs and PNe
- Total chaos?







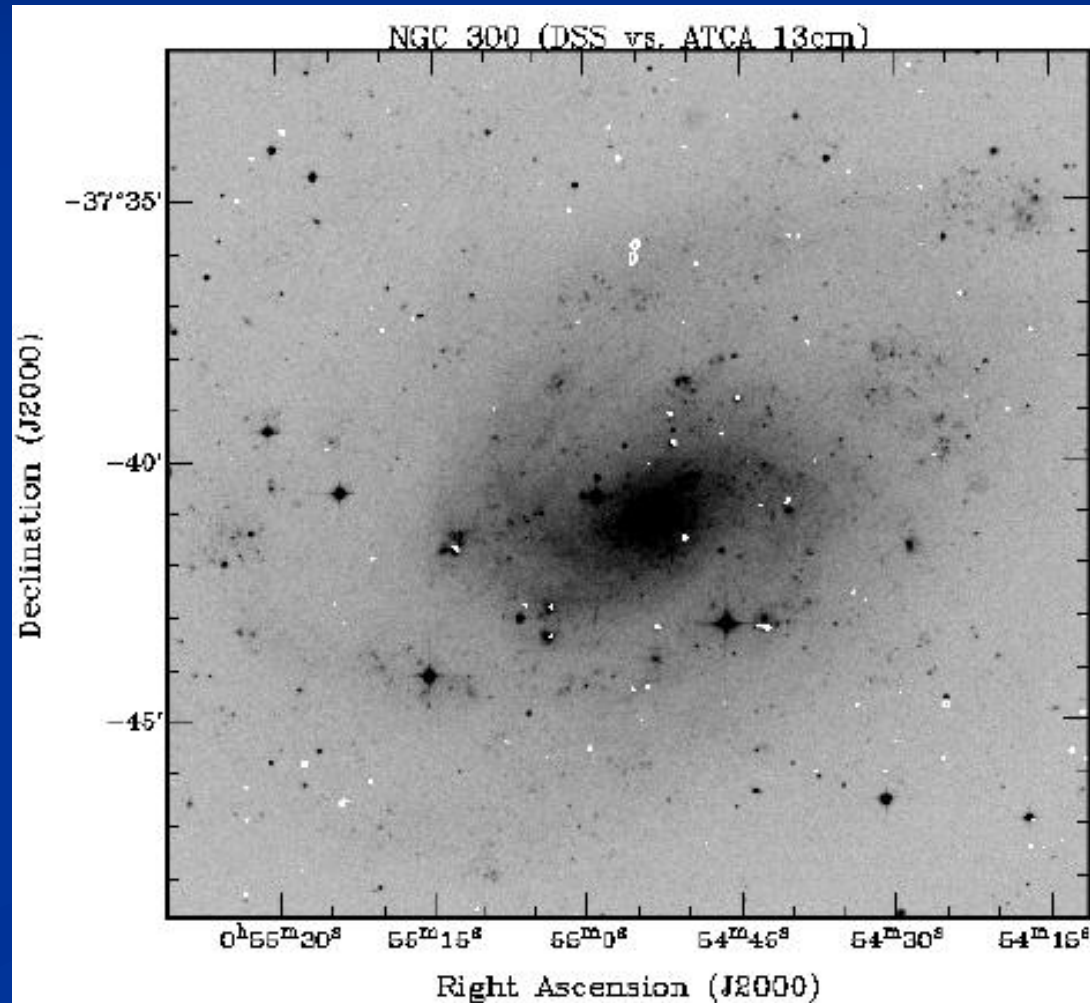
“...and things goes on...”



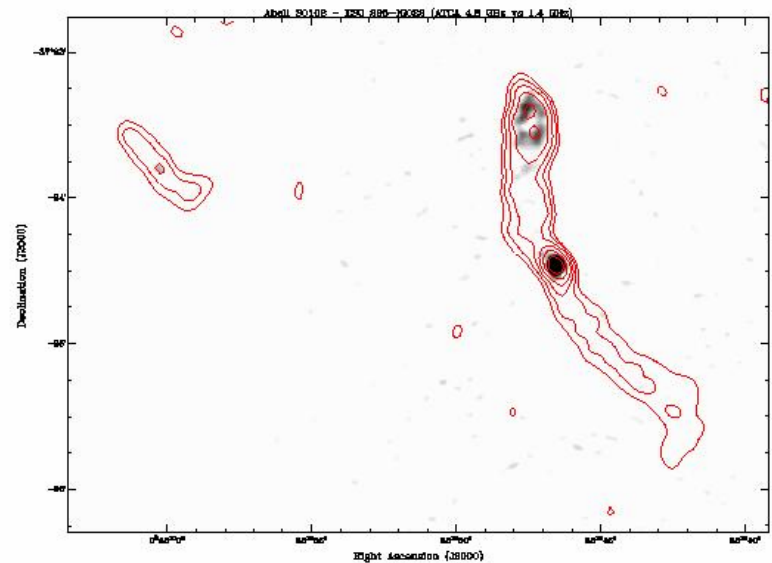
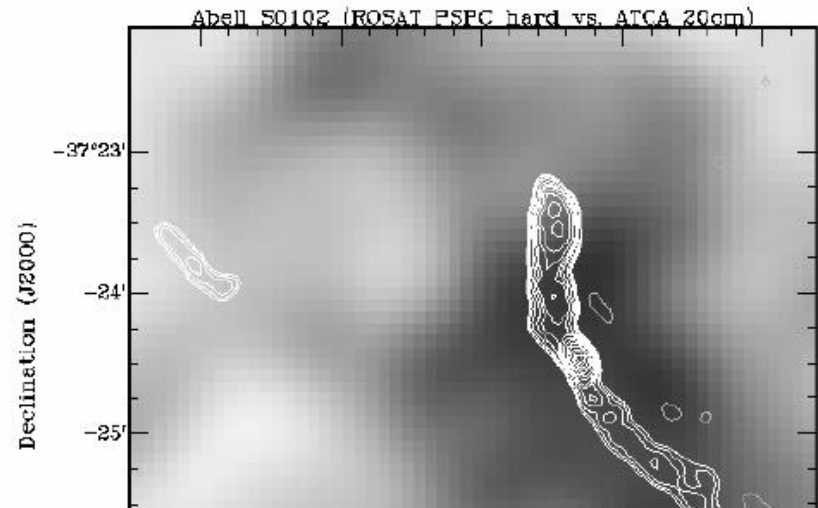
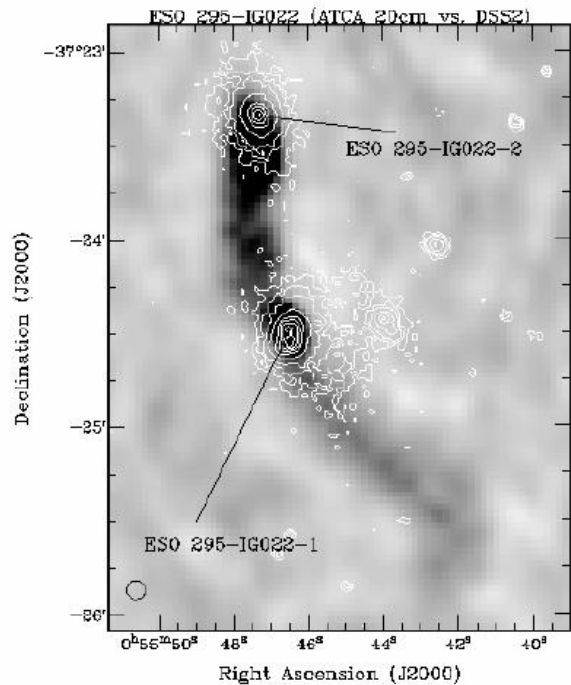
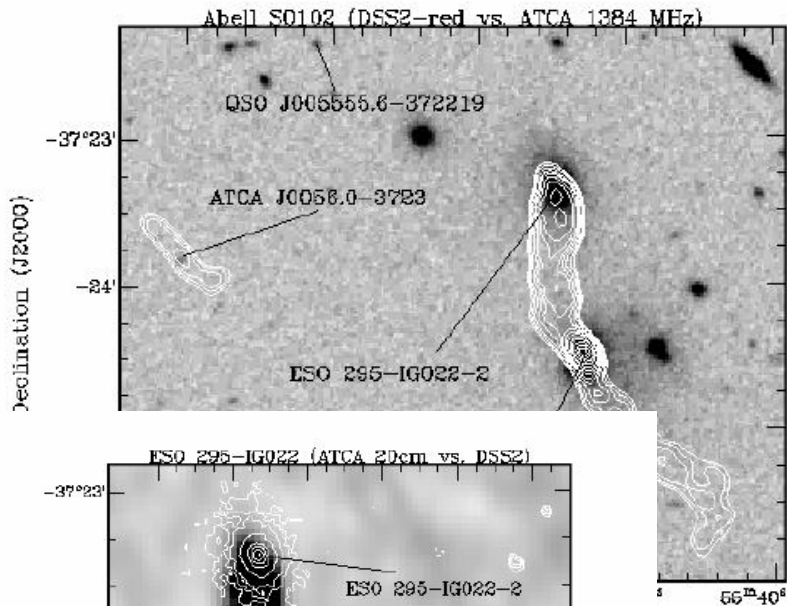
# NGC 300 i NGC 7793

## Sculptor Group

- Distance 3-5 Mpc
- Very active?
- Bigger?
- NGC 7793 –S26
  - 25× bigger than 30Dor
  - SNR or Bubble?



# Galaxy Cluster Abell S0102



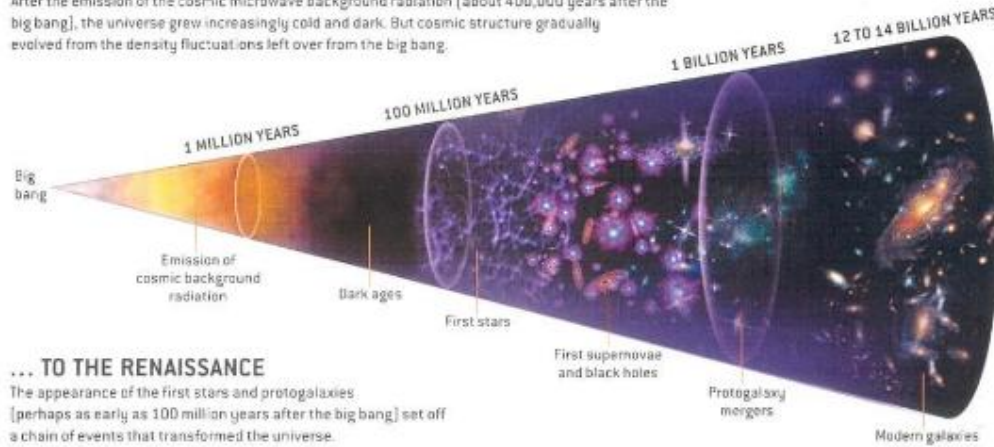


# COSMIC TIME LINE

Scientific American special edition Vol. 112 No. 2 2007

## FROM THE DARK AGES ...

After the emission of the cosmic microwave background radiation (about 400,000 years after the big bang), the universe grew increasingly cold and dark. But cosmic structure gradually evolved from the density fluctuations left over from the big bang.

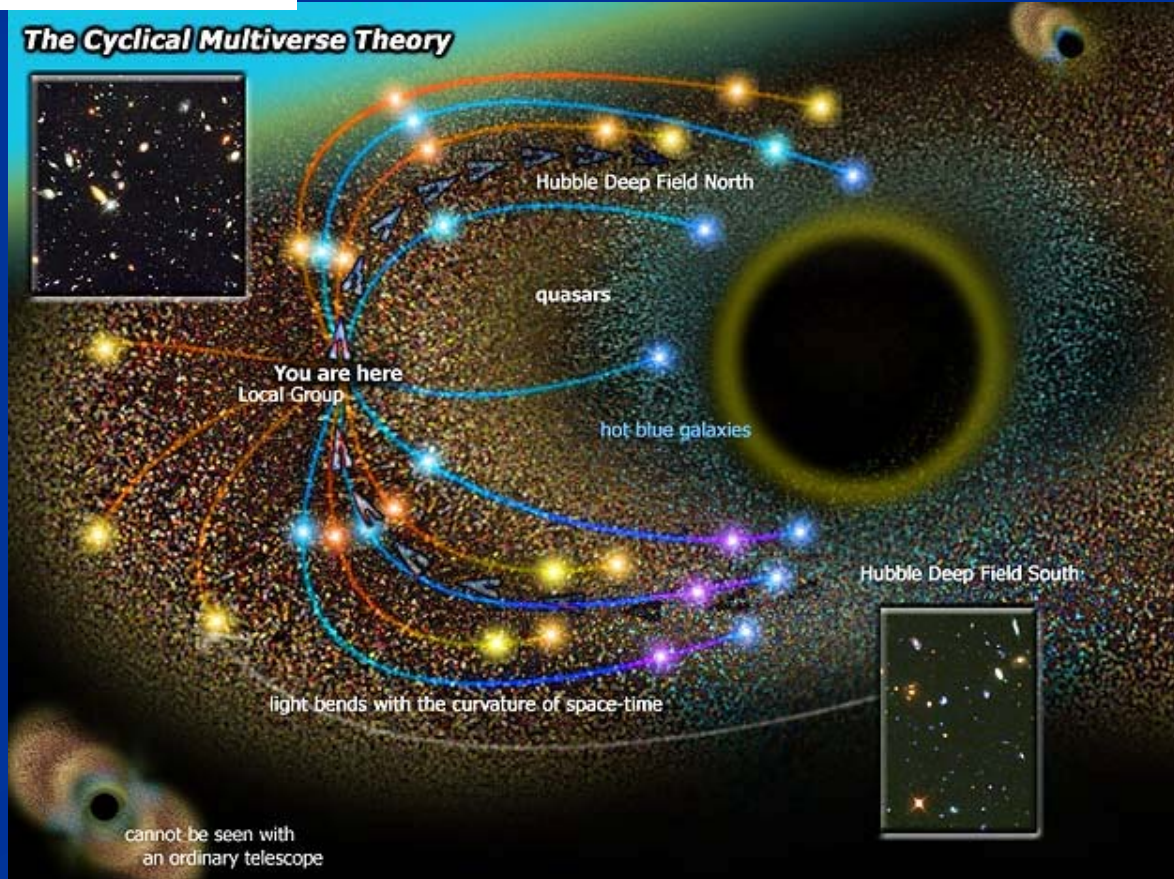


## ... TO THE RENAISSANCE

The appearance of the first stars and protogalaxies (perhaps as early as 100 million years after the big bang) set off a chain of events that transformed the universe.

# LOST??

## The Cyclical Multiverse Theory



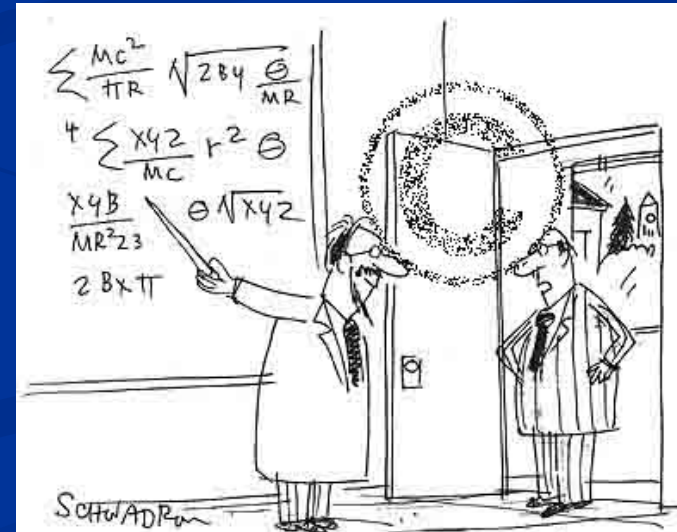
10/08/2007

# So what?

- Brick is complex and expensive? Who invented brick?
- Wind is the real MIRACLE and always is blowing?
- House is simple and renovation happens over night?
- Where else we could find bricks, wind and houses?
- Could we create bricks somewhere far, far away?
- Perhaps one day.... Ha?

# What to do?

- Politics (No Sex, Drugs, R&R...)
- Globalization?
- Biology or even worst - Chemistry?
- Computers
- .....



"The Big Bang Theory? I want you to come up with the Big Bucks Theory!"

# Anything else?



## ■ Part II --- BB vs. MOND

- Score half-time (65:35)

## ■ Part III --- Earth strike back!

- (The age of new BRICKS)

