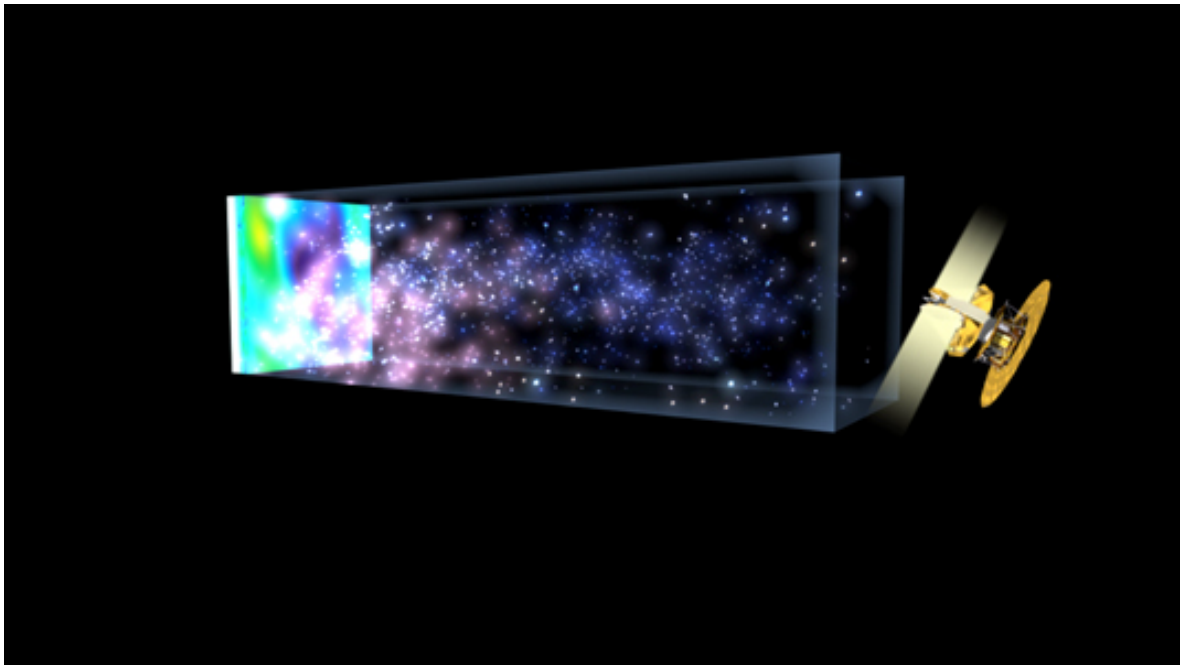
From: http://map.gsfc.nasa.gov/

Some Theories Win, Some Lose.

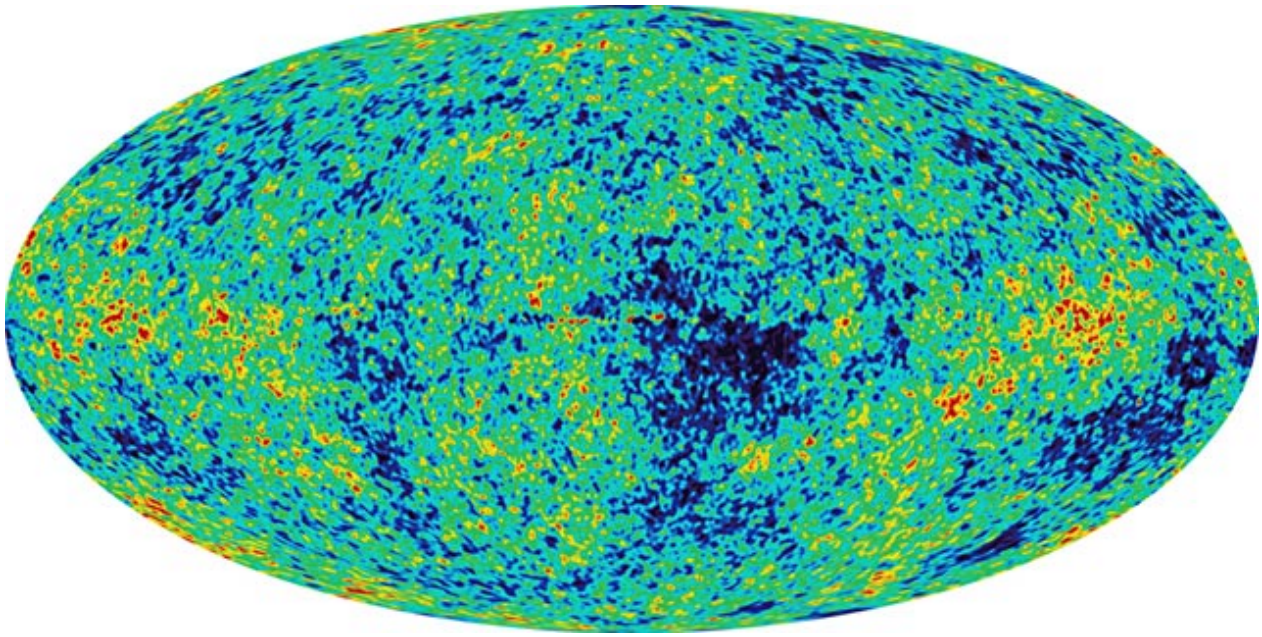


We use our new detailed picture to ask: "What happened earlier to make this picture happen?"
We now begin to probe the earliest moments of the universe: Inflation (the rapid expansion of the universe a fraction of a second after its birth.). We have ruled out a textbook example of a particular inflation model. But others will be supported with this new evidence.

Starting from the time of our picture we can ask: "What must have happened later?"
We have compared and combined the new WMAP data with other diverse cosmic measurements (galaxy clustering, Lyman-alpha cloud clustering, supernovae, etc.), and we have found a new unified understanding of universe:

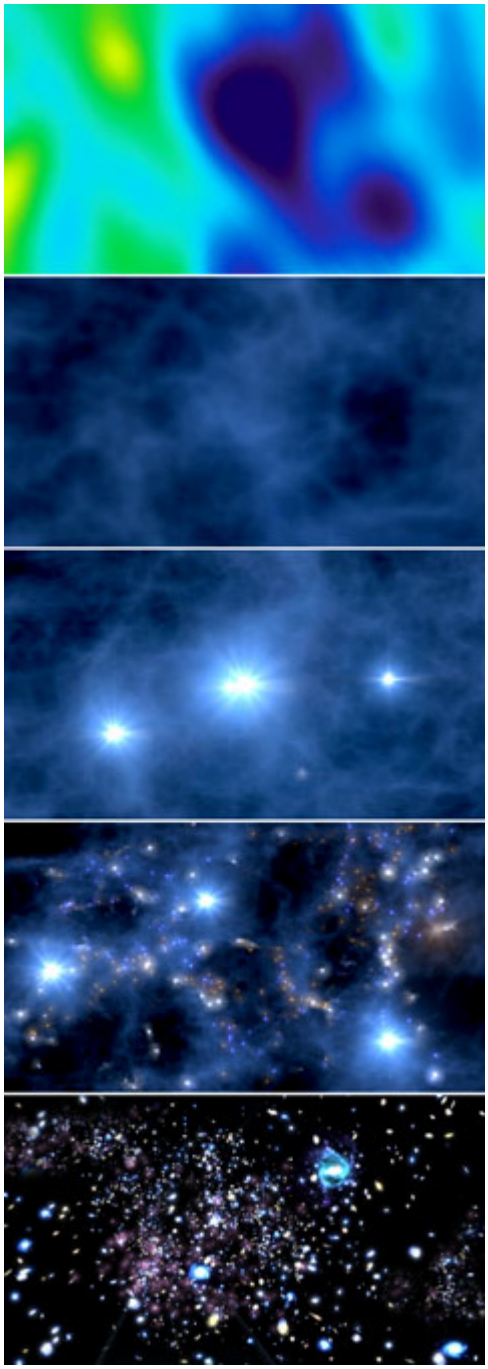
- Universe is 13.7 billion years old with only a 1% margin error.
- First stars ignited 200 million years after the Big Bang.
- Light in WMAP picture from 380,000 years after the Big Bang.
- Content of the Universe: 4% Atoms, 23% Cold Dark Matter, 73% Dark energy. The data places new constraints on the dark energy. It seems more like a "cosmological constant" than a negative-pressure energy field called "quintessence". But quintessence is not ruled out. Fast moving neutrinos do not play any major role in the evolution of structure in the universe. They would have prevented the early clumping of gas in the universe, delaying the emergence of the first stars, in conflict with the new WMAP data.
- Expansion rate (Hubble constant) value: Ho= 71 km/sec/Mpc (with a margin of error of about 5%)
- New evidence for Inflation (in polarized signal)
- Fate of the Universe: it will expand forever...

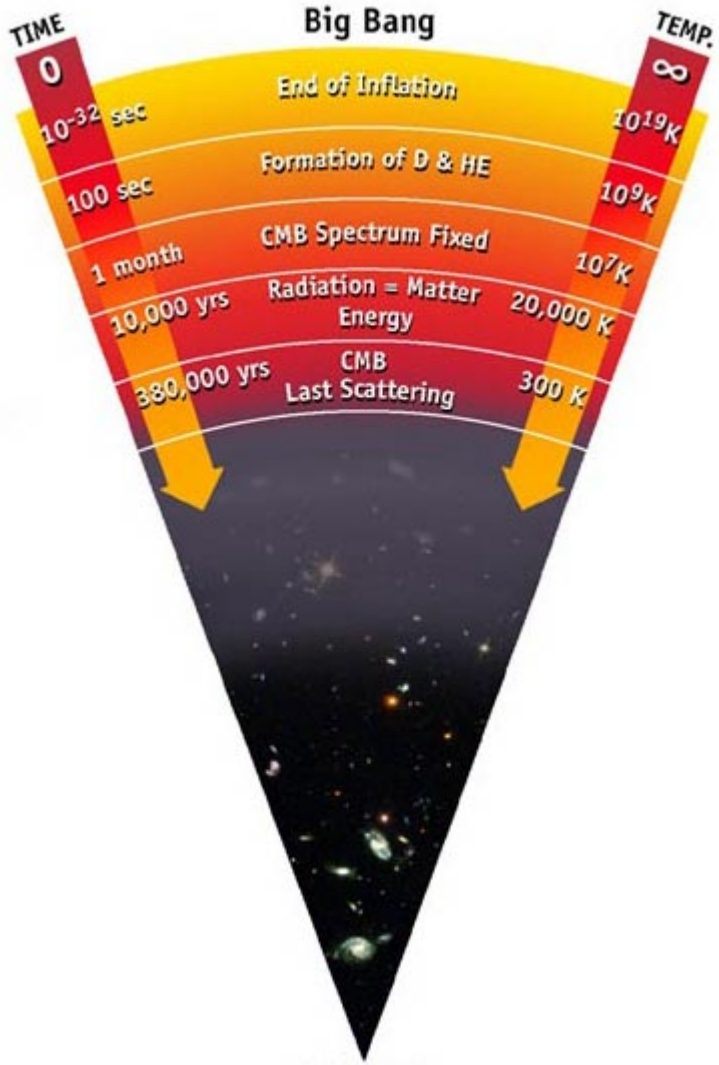
The Wilkinson Microwave Anisotropy Probe (WMAP) team has made the first detailed full-sky map of the oldest light in the universe. It is a "baby picture" of the universe. Colors indicate "warmer" (red) and "cooler" (blue) spots. The oval shape is a projection to display the whole sky; similar to the way the globe of the earth can be projected as an oval.
The microwave light captured in this picture is from 380,000 years after the Big Bang, over 13 billion years ago: the equivalent of taking a picture of an 80 year old person on the day of their birth.



The data brings into sharp focus the seeds that generated the cosmic structure we see today. These patterns are tiny temperature differences within an extraordinarily evenly dispersed microwave light bathing the Universe, which now averages a frigid 2.73 degrees above absolute zero temperature. WMAP resolves slight temperature fluctuations, which vary by only millionths of a degree.

The new data support and strenghten the Big Bang and Inflation Theories.





PRESENT
13.7 Billion Years
after the Big Bang