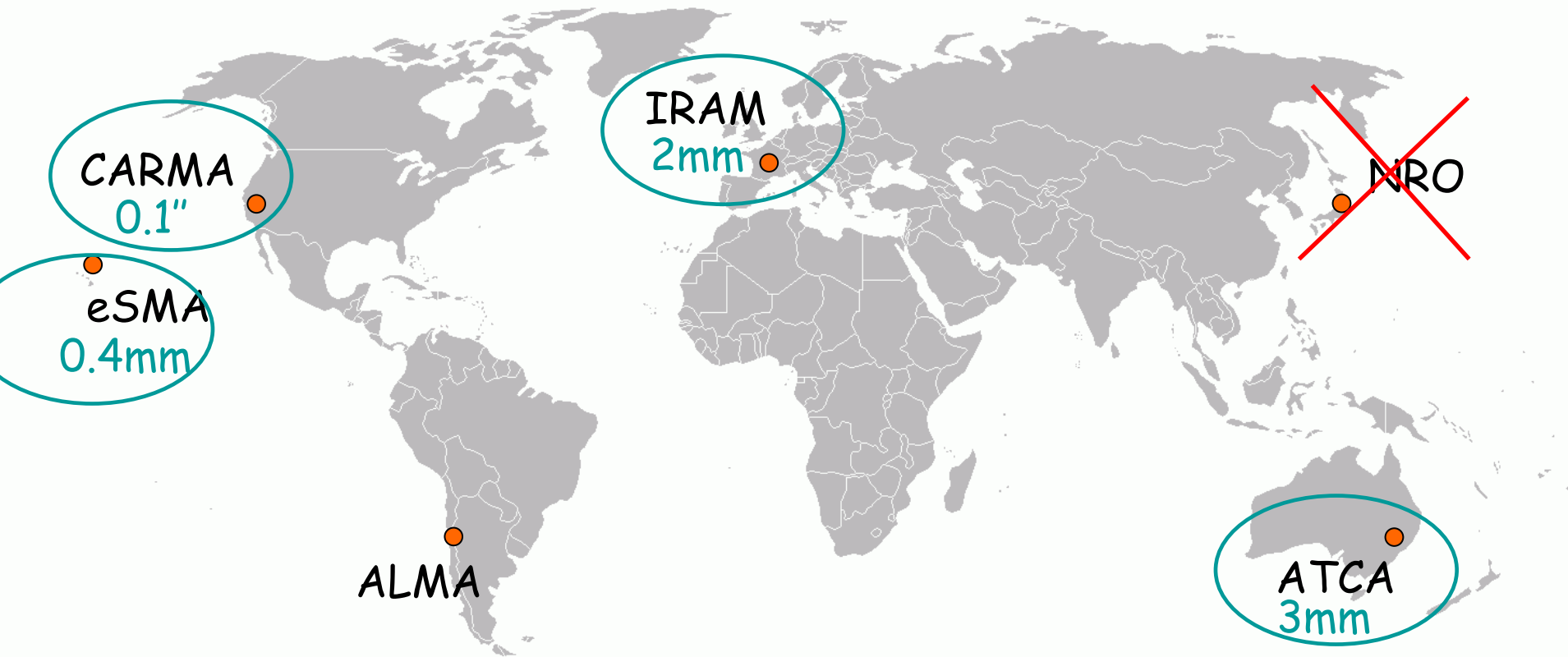


NOEMA

The Northern Extended Millimeter Array

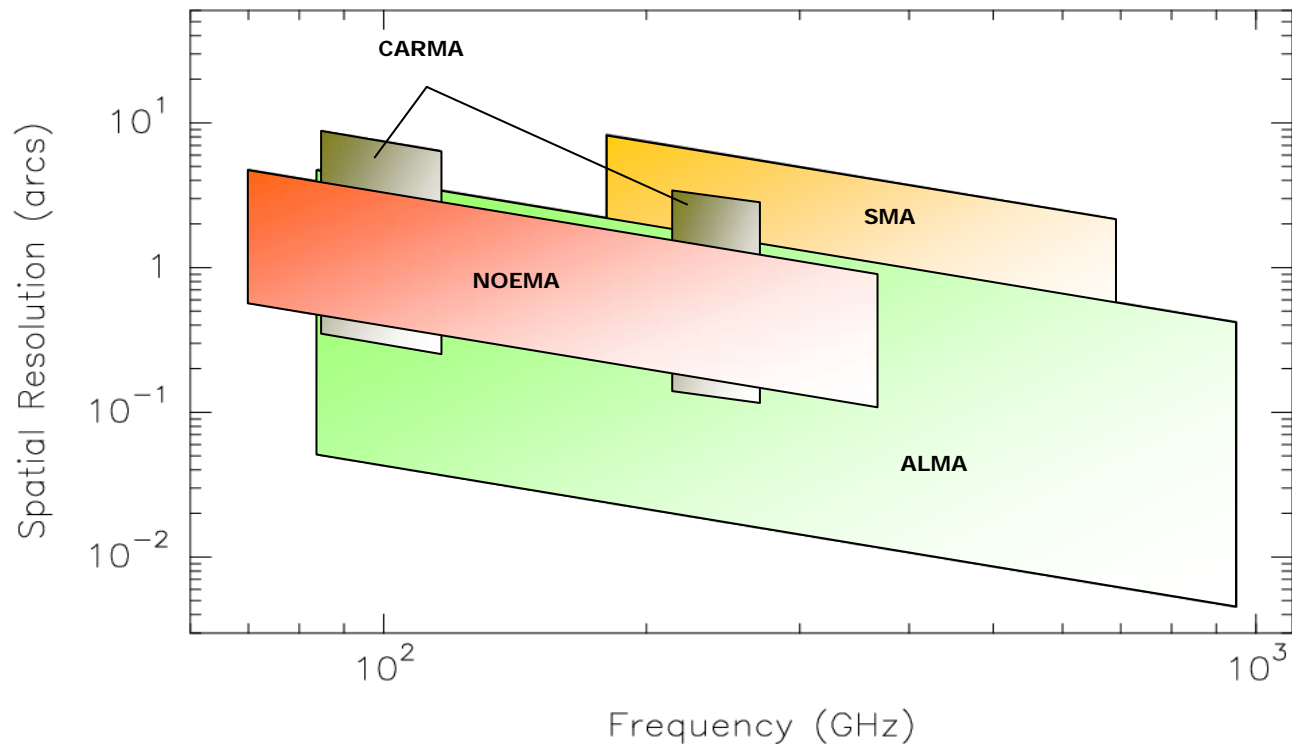
IRAM - CNRS, MPG and IGN

(sub)mm-interferometers worldwide

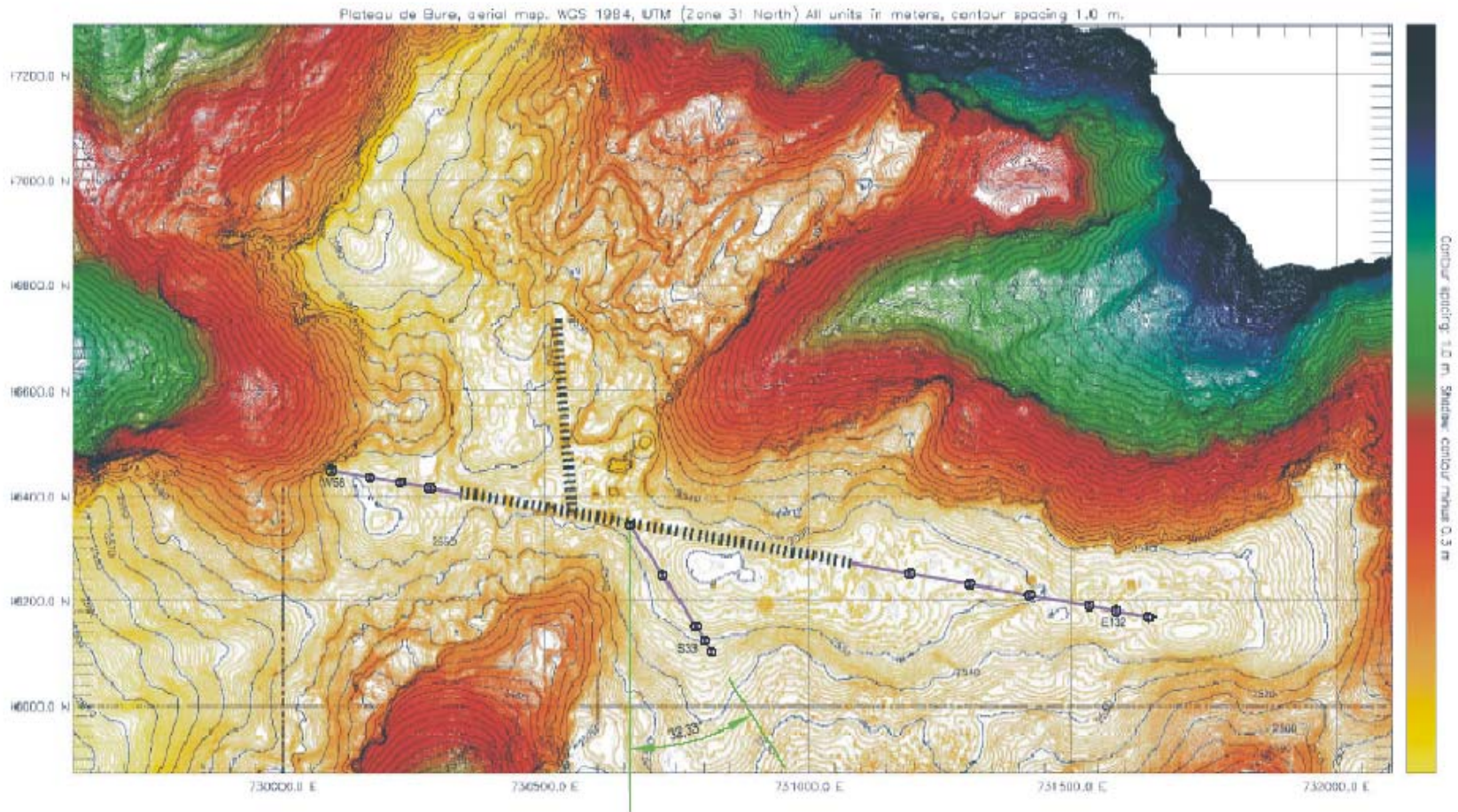


The Project

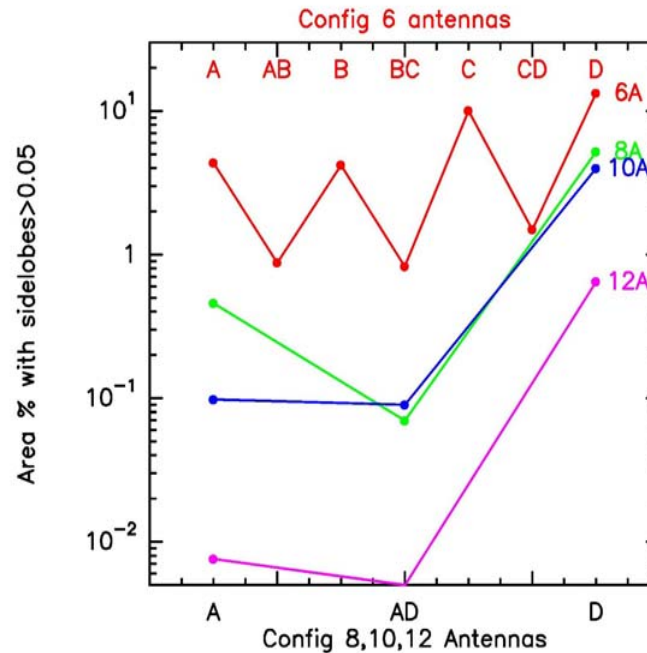
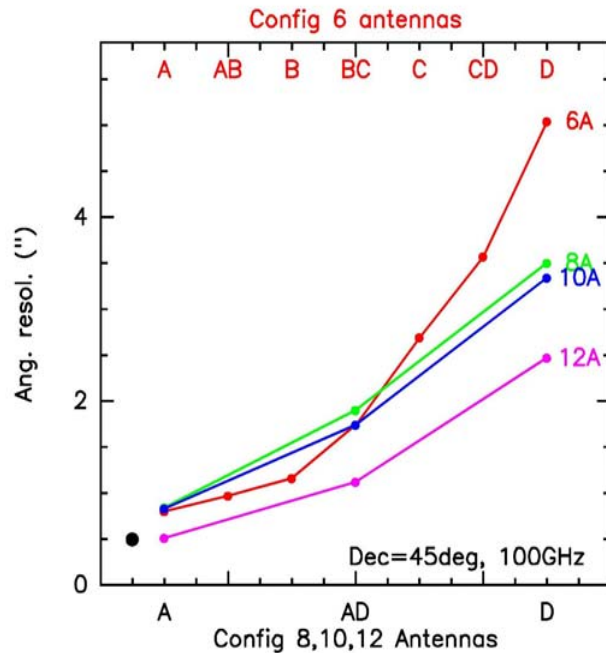
- double the number of 15 m antennas from 6 to 12
- double the baselines from 0.8 to 1.6 km
- quadruple the IF bandwidth from 8 GHz to 32 GHz



Baseline Extension Studies



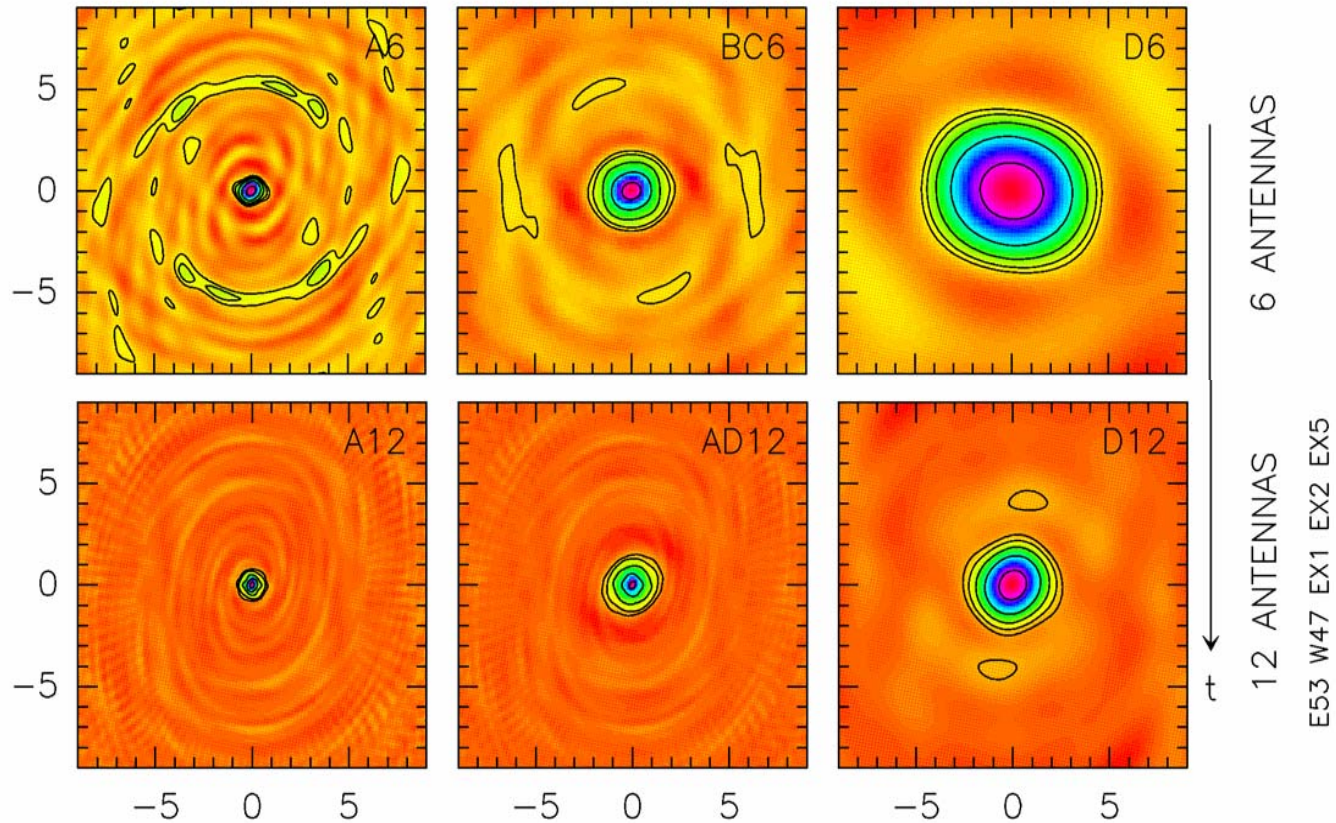
Imaging \Rightarrow Beams and Sidelobes



Boissier 2008

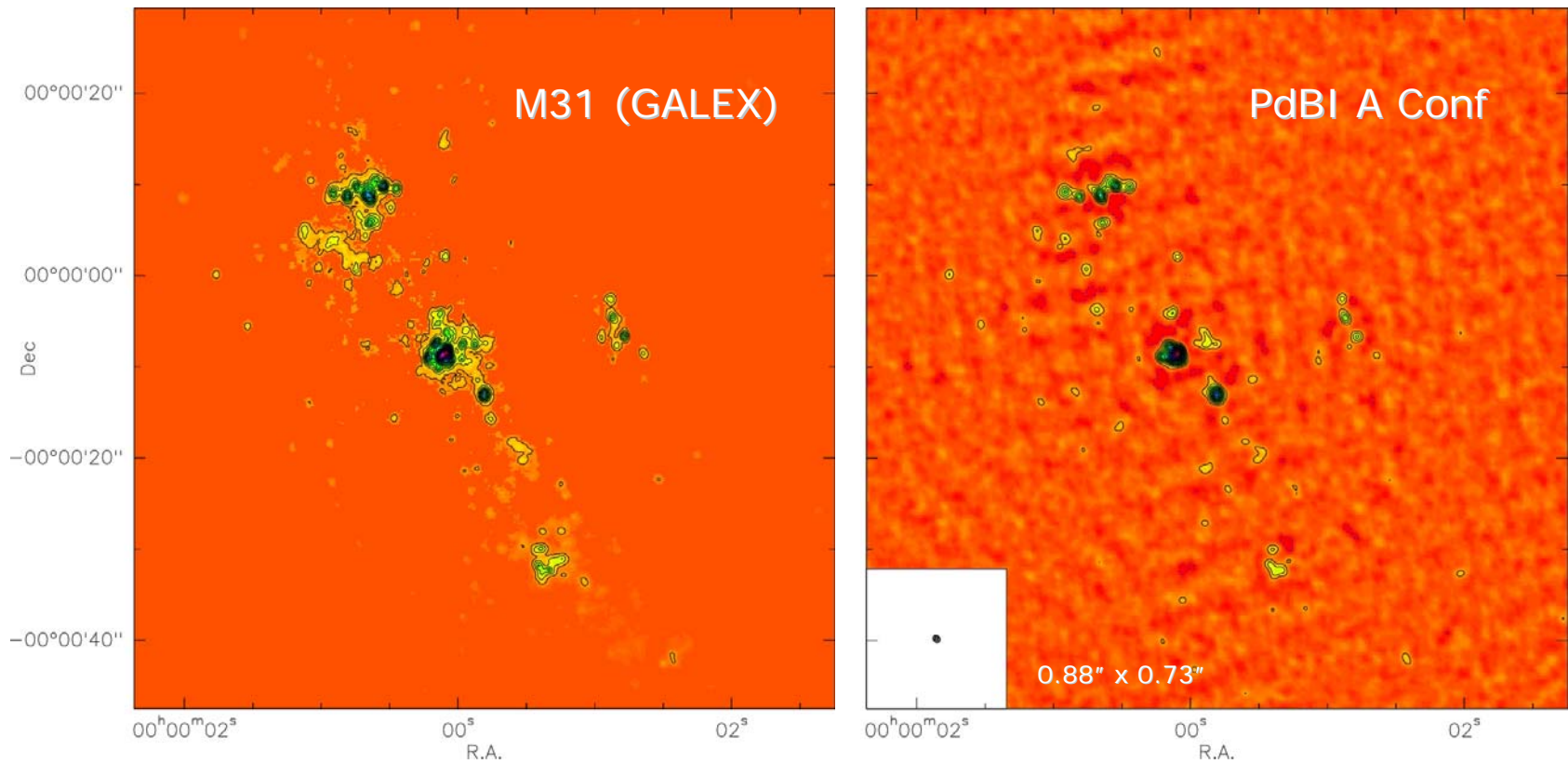
NOEMA \Rightarrow > 3x surface resolving power (\Rightarrow optical)
 \Rightarrow > 10x sidelobe suppression

Design considerations: Low sidelobe levels \implies high dynamic



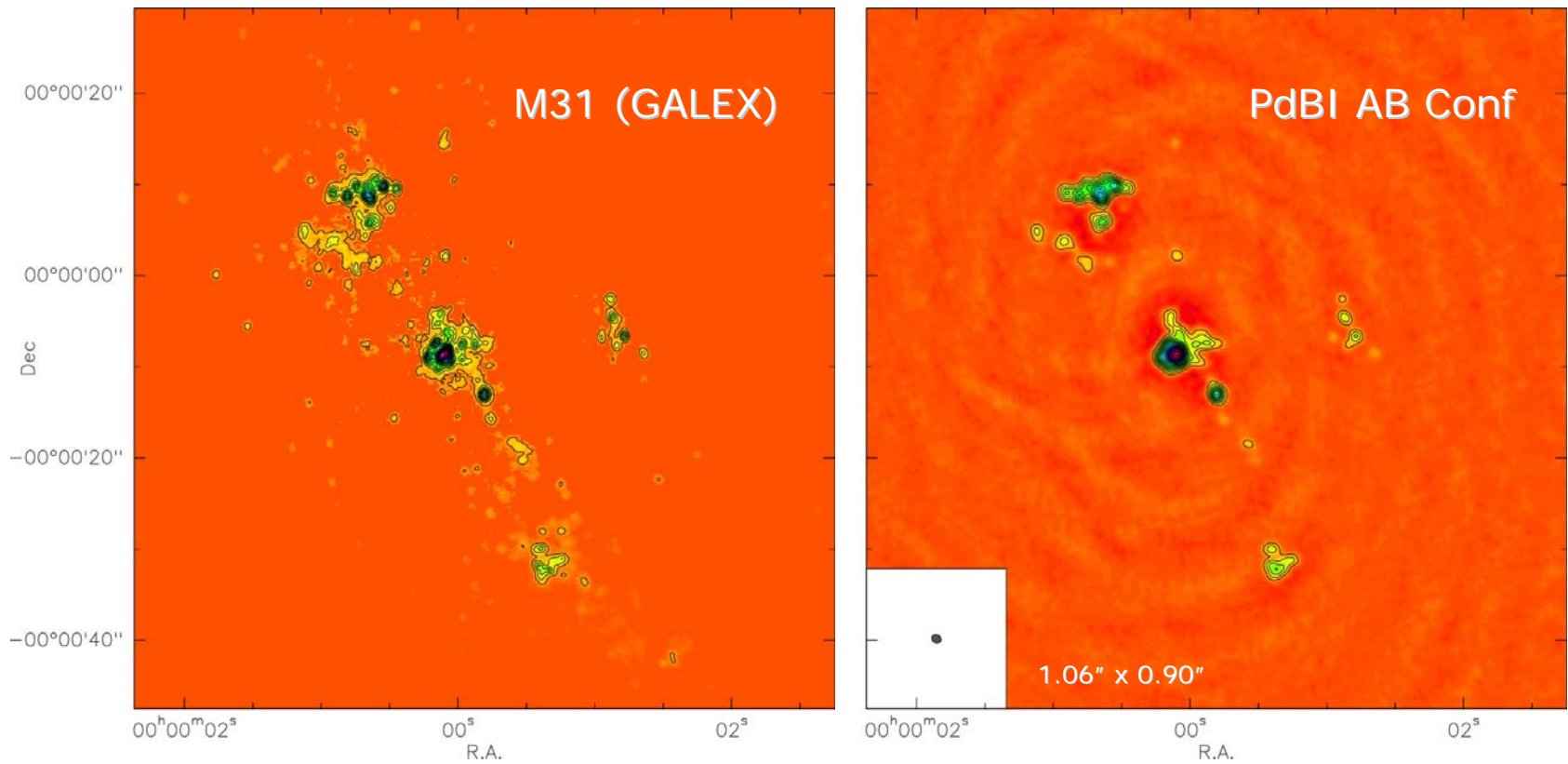
Imaging \Rightarrow Simulations @ 100 GHz

Boissier 2009



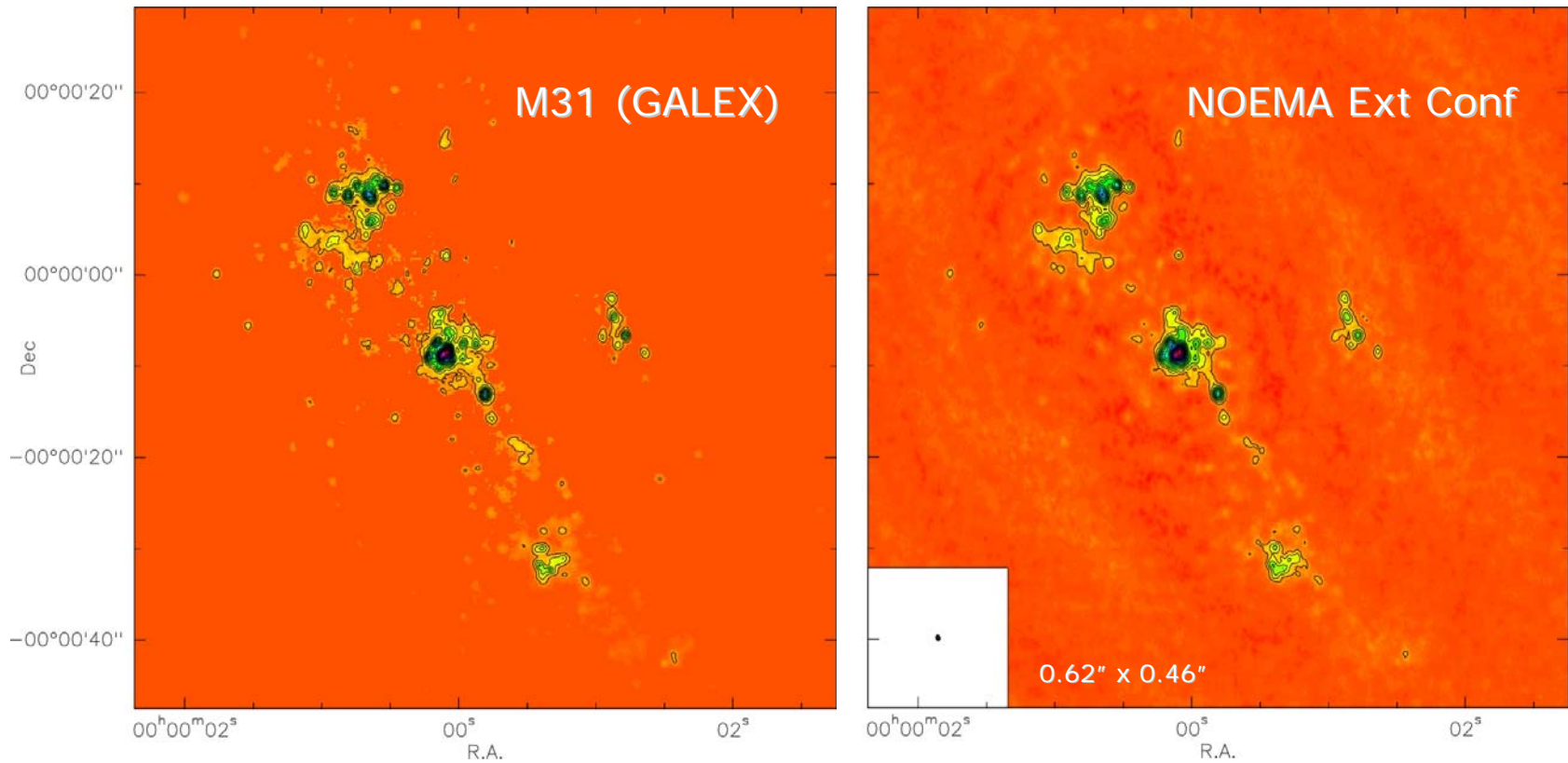
Imaging \Rightarrow Simulations @ 100 GHz

Boissier 2009

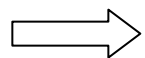
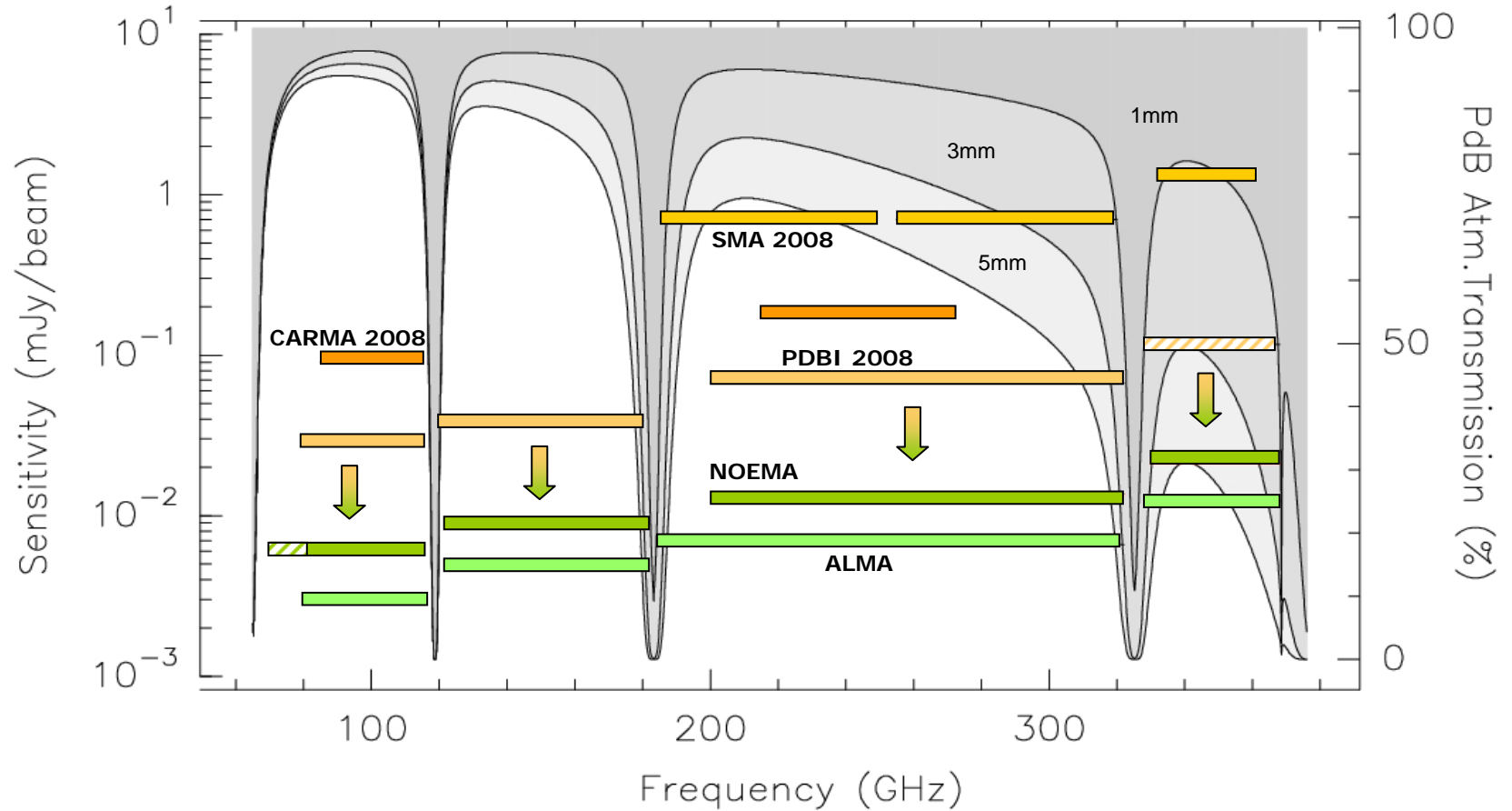


Imaging \Rightarrow Simulations @ 100 GHz

Boissier 2009

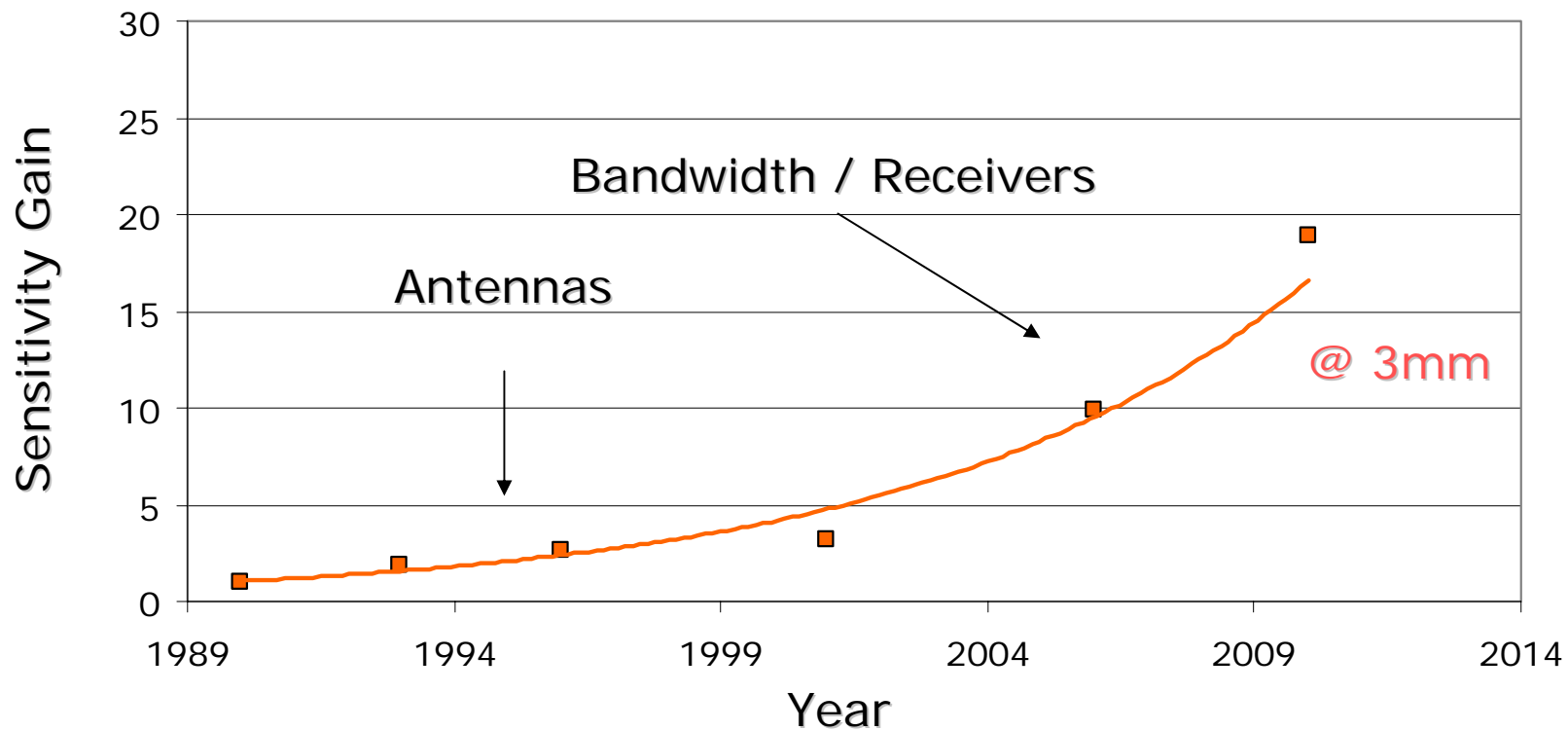


Continuum Sensitivities

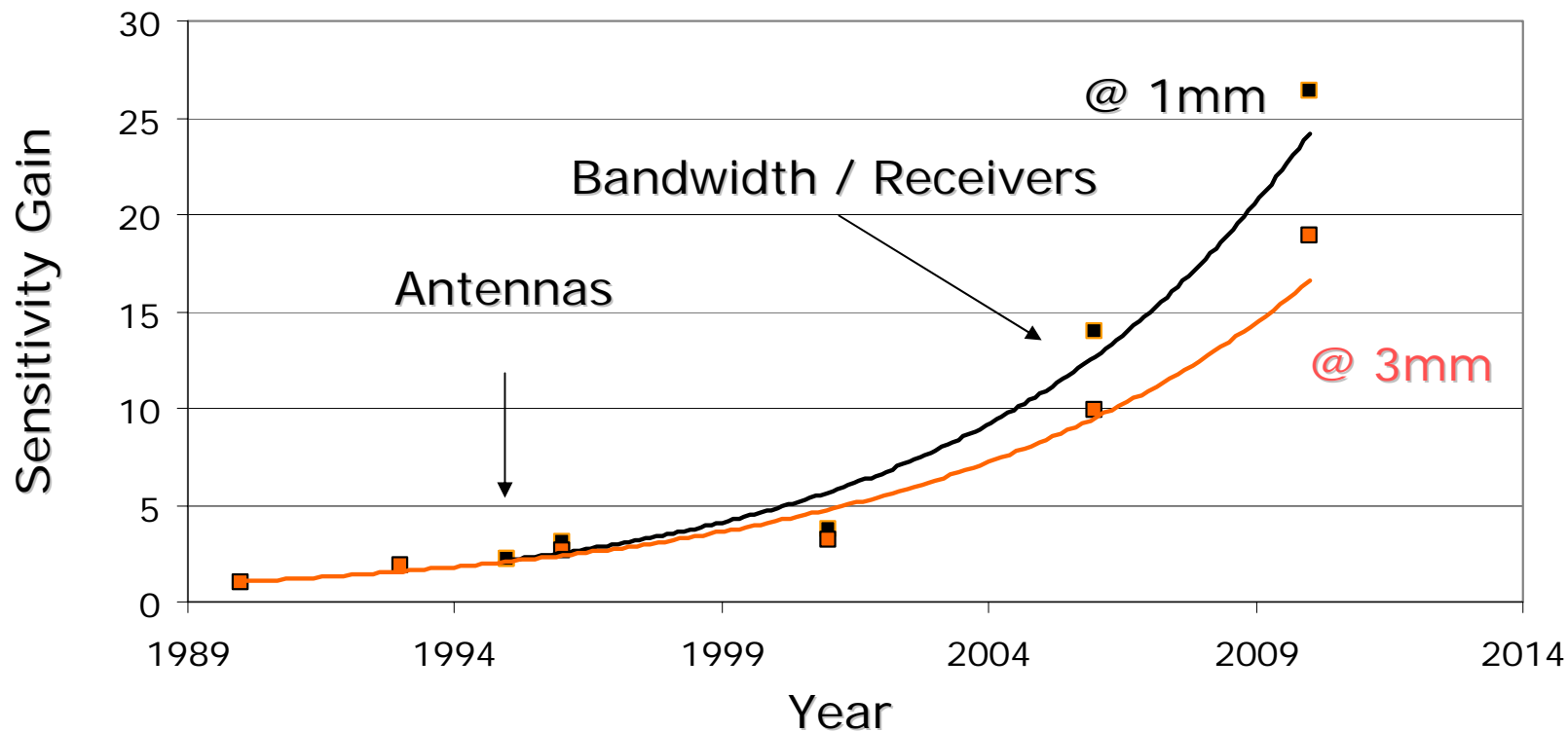


reach 1/3 ALMA line sensitivity, 1/2 ALMA continuum sensitivity

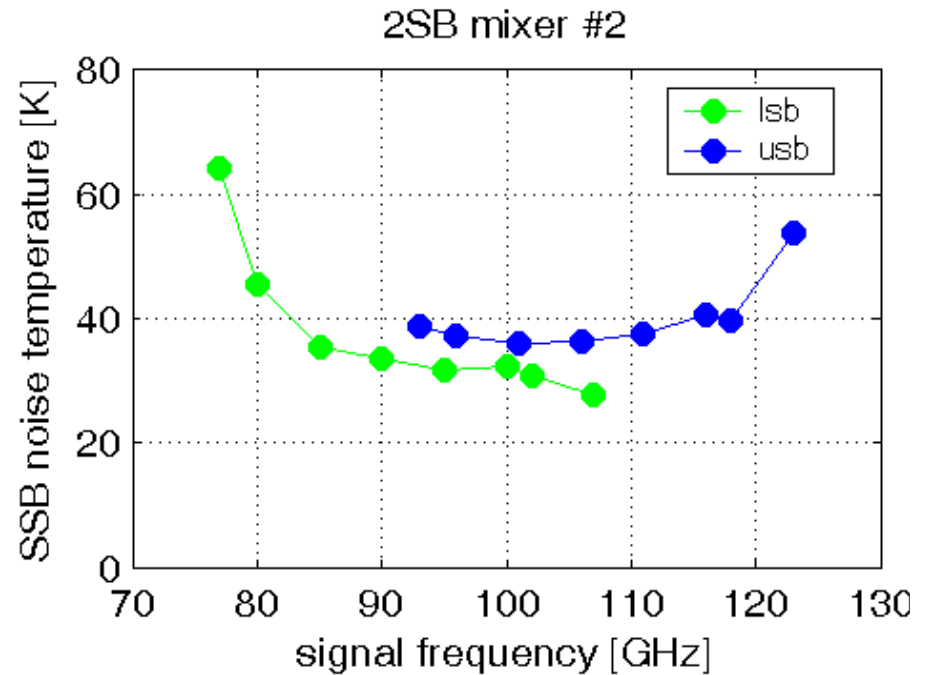
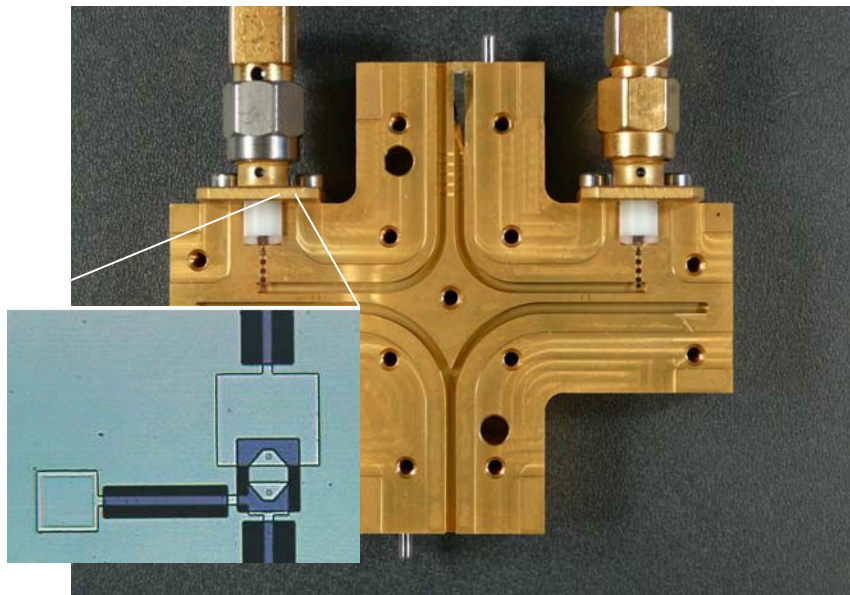
PdBI Continuum Sensitivity (1990 >)



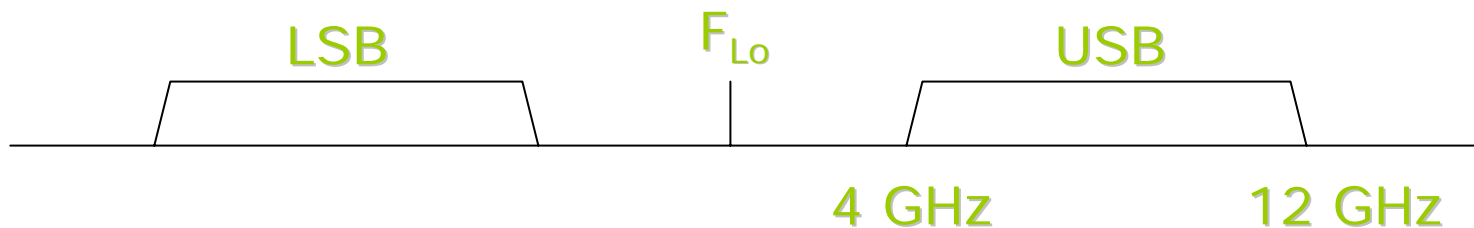
PdBI Continuum Sensitivity (1995 >)



New 8 GHz 2SB Development for Band1



Delivers 16 GHz of IF band per polarization !



Long-term @ 90 GHz

	η_A	NPOL	Bandwidth (MHz)	Continuum (μJy)	Speed	Line (mJy/1MHz)	Speed
PdBI	0.72	2	4000	29	100	1.8	36
CARMA	0.70	1	4000	90	1000	5.7	360
NOEMA	0.72	2	16000	6.5	5	0.8	7
ALMA	0.80	2	8000	2.9	1	0.3	1

NOEMA \Rightarrow ~5x PdBI sensitivity increase in the continuum
 \Rightarrow ~2.5x PdBI sensitivity increase in the line

Status of the NOEMA Project

- Phase A Study: presented to the Council (June 2008)
- Distributed to the SAC for comments and inputs:
revised version is available on <http://www.iram.fr>
- Discussions with the Partners and the Communities
- NOEMA introduced in the INSU/CNRS Prospective (Fall 2009)
Presentation to the French community on June 4th, 2009.
- Technical studies (2009 >)
- Science Case (2009/2010)
- Green Light (2010?)

How far can you stretch your imagination?

2009



201?

