

# Assessing Annual Global M6+ Seismicity Forecasts

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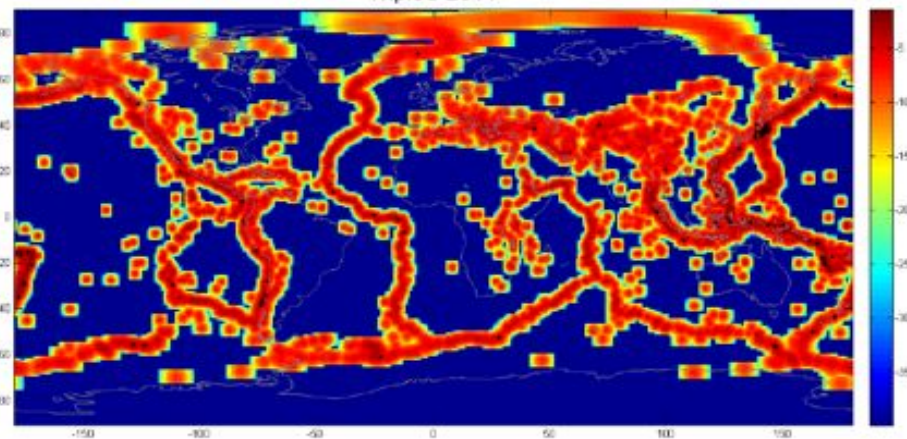
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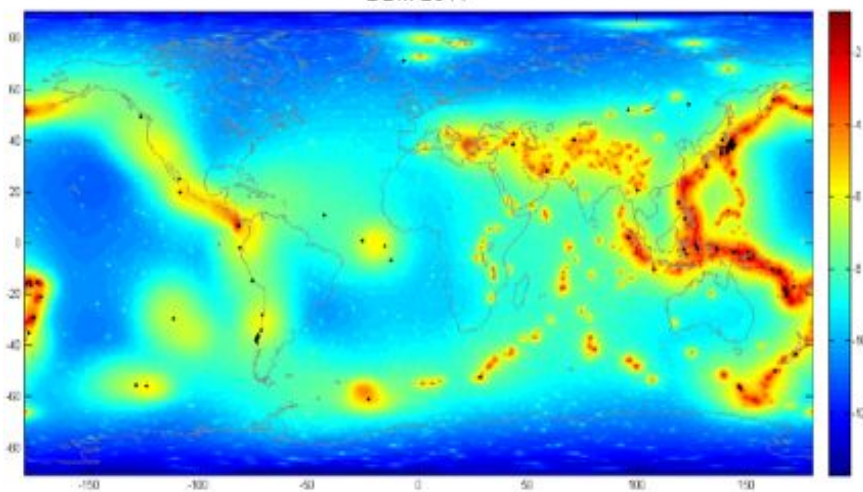
- Models
- Consistency tests
- Comparison tests and models' ranking
- Ensemble models
- Lessons learnt

# CSEP global experiment: the models

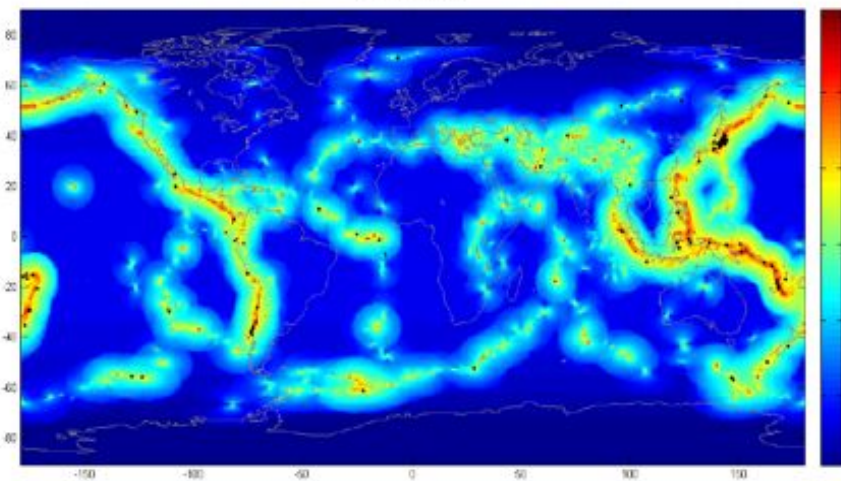
TripleS 2011



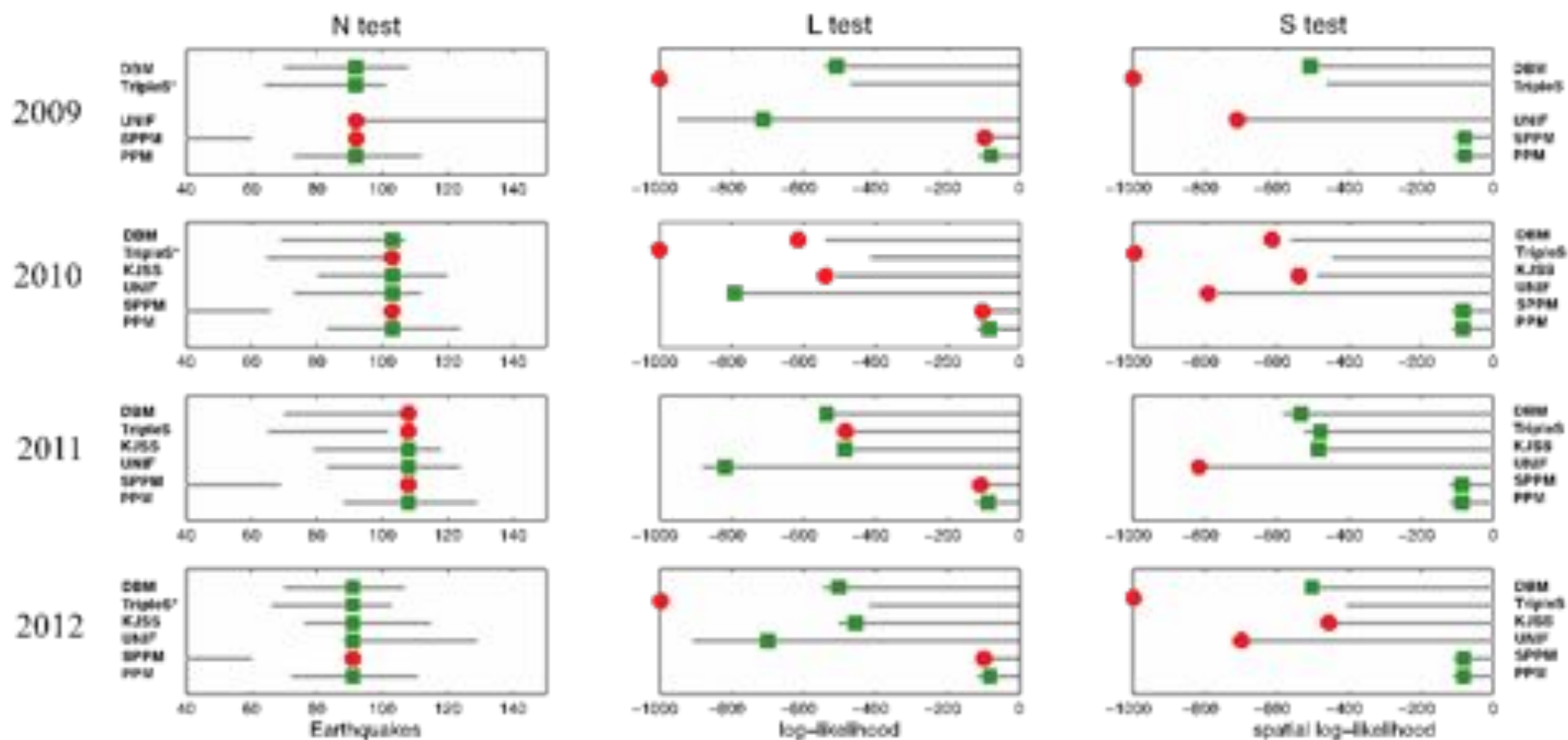
DBM 2011



KJSS 2011



# Results of the N-, L- and S-test



## CSEP global experiment: comparison tests

	DBM vs. TripleS		DBM vs. KJSS		TripleS vs. KJSS	
	Sign- or W-test	Bayes factor	Sign- or W-test	Bayes factor	Sign- or W-test	Bayes factor
<b>2009</b>	TripleS (Sign) (-2.90 -0.40 0.75)	DBM 608	n/a	n/a	n/a	n/a
<b>2010</b>	DBM (W) (-3.45 -0.99 1.83)	DBM 1980	= (-2.68 -0.37 0.91)	KJSS 75	TripleS (Sign) (-1.84 0.36 2.26)	KJSS 2056
<b>2011</b>	= (-3.30 -0.11 1.08)	TripleS 52	= (-2.33 -0.15 0.88)	KJSS 50	= (-1.66 0.07 1.49)	= 2.3
<b>2012</b>	DBM (W) (-3.30 -0.51 0.65)	DBM 616	= (-2.75 -0.41 1.16)	KJSS 46	KJSS (W) (-1.15 0.36 1.95)	KJSS 663
<b>2010-12</b>	DBM (W) (-3.36 -0.33 1.23)	DBM 2544	= (-2.63 -0.23 1.00)	KJSS 171	TripleS (Sign) (-1.70 0.23 1.64)	KJSS 2716

## CSEP global experiment: ranking models

	<b>Sign- or W-test</b>	<b>Bayes factor</b>	<b>PGS</b>
<b>2009 (92)</b>	1. TripleS 2. DBM	1. DBM 2. TripleS	1. TripleS 2. DBM
<b>2010 (103)</b>	1. DBM, TripleS, KJSS	1. KJSS 2. DBM 3. TripleS	1. TripleS 2. KJSS 3. DBM
<b>2011 (108)</b>	1. DBM, TripleS, KJSS	1. TripleS, KJSS 2. DBM	1. TripleS 2. KJSS 3. DBM
<b>2012 (91)</b>	1. DBM, KJSS 2. TripleS	1. KJSS 2. DBM 3. TripleS	1. TripleS 2. KJSS 3. DBM
<b>2010-12 (302)</b>	1. DBM, TripleS, KJSS	1. KJSS 2. DBM 3. TripleS	1. TripleS 2. KJSS 3. DBM

## CSEP global experiment: considering the Ensemble model

### Log-likelihood ranking

<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>
<b>EM: -451.5</b>	<b>PGMA: -513.6</b>	<b>PGMA: -469.2</b>	<b>PGMA: -419.5</b>
DBM: -507.9	<b>SMA: -536.5</b>	<b>SMA: -478.0</b>	<b>SMA: -438.3</b>
TripleS: -1160	KJSS: -539.5	<b>BFMA: -482.0</b>	<b>BFMA: -449.6</b>
	<b>BFMA: -584.8</b>	TripleS: -483.1	<b>gSMA: -455.4</b>
	<b>gSMA: -612.6</b>	<b>gSMA: -484.8</b>	KJSS: -456.1
	DBM: -615.1	KJSS: -485.5	DBM: -502.7
	TripleS: -2649	DBM: -535.5	TripleS: -1119

- ❑ **Consistency** tests (**L-test** in particular) are **misleading** (bad models work, and other good models do not)
- ❑ With standard **comparison** test is very **difficult to establish a rank** of models
- ❑ **Ensemble** models work **better**
- ❑ The **time-dependency** is much less important than the **spatial distribution**