Emergency Response Preparedness

A "new" way of responding to disasters

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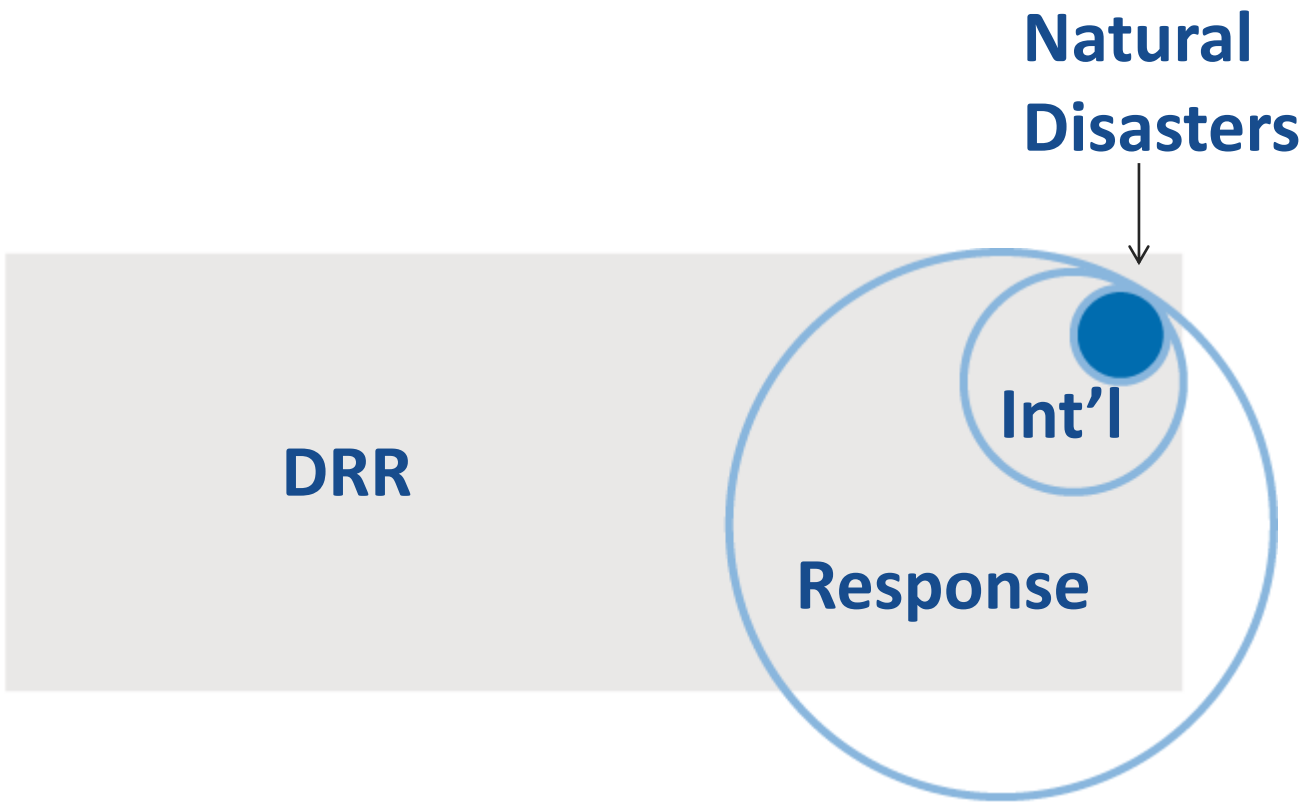
OCHA

Disaster Management

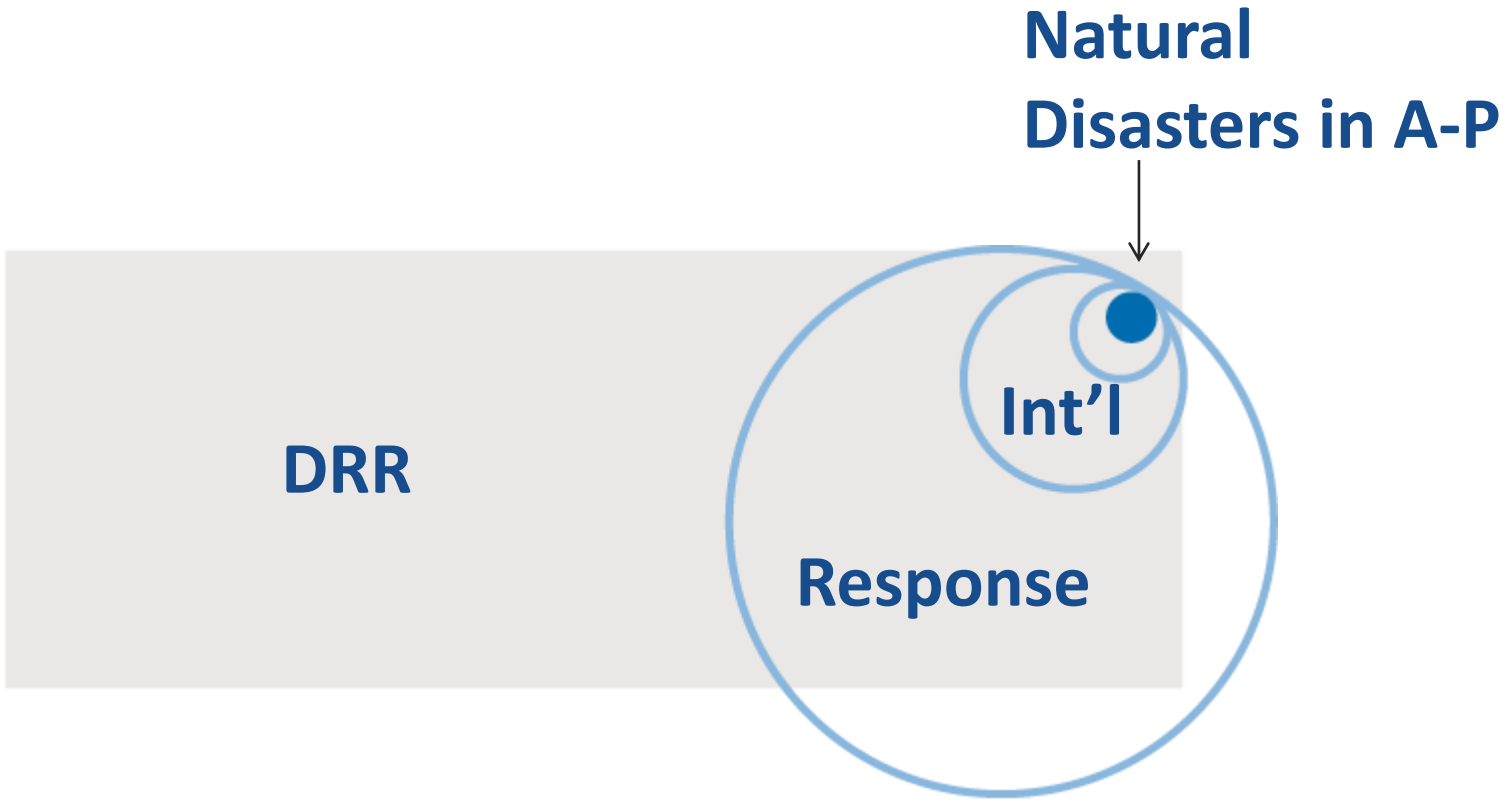
Emergency Response

International Humanitarian Response

Natural Disasters



Natural Disasters in Asia-Pacific



What does this mean?

- SPEED
- VOLUME
- QUALITY

How do we do this?

Make the most of the data we have

Given the number of important decisions that are made in the first 2-3 days, such as:

- How big is this emergency response?
- Do we need surge, field offices, emergency funds?
- What are the priority areas?
- Flash Appeal? CERF? Other funding mechanisms?

And given that going out and doing a rapid assessment is not possible in the given time frame we must make the most of the data that IS available. We've been doing this for years.

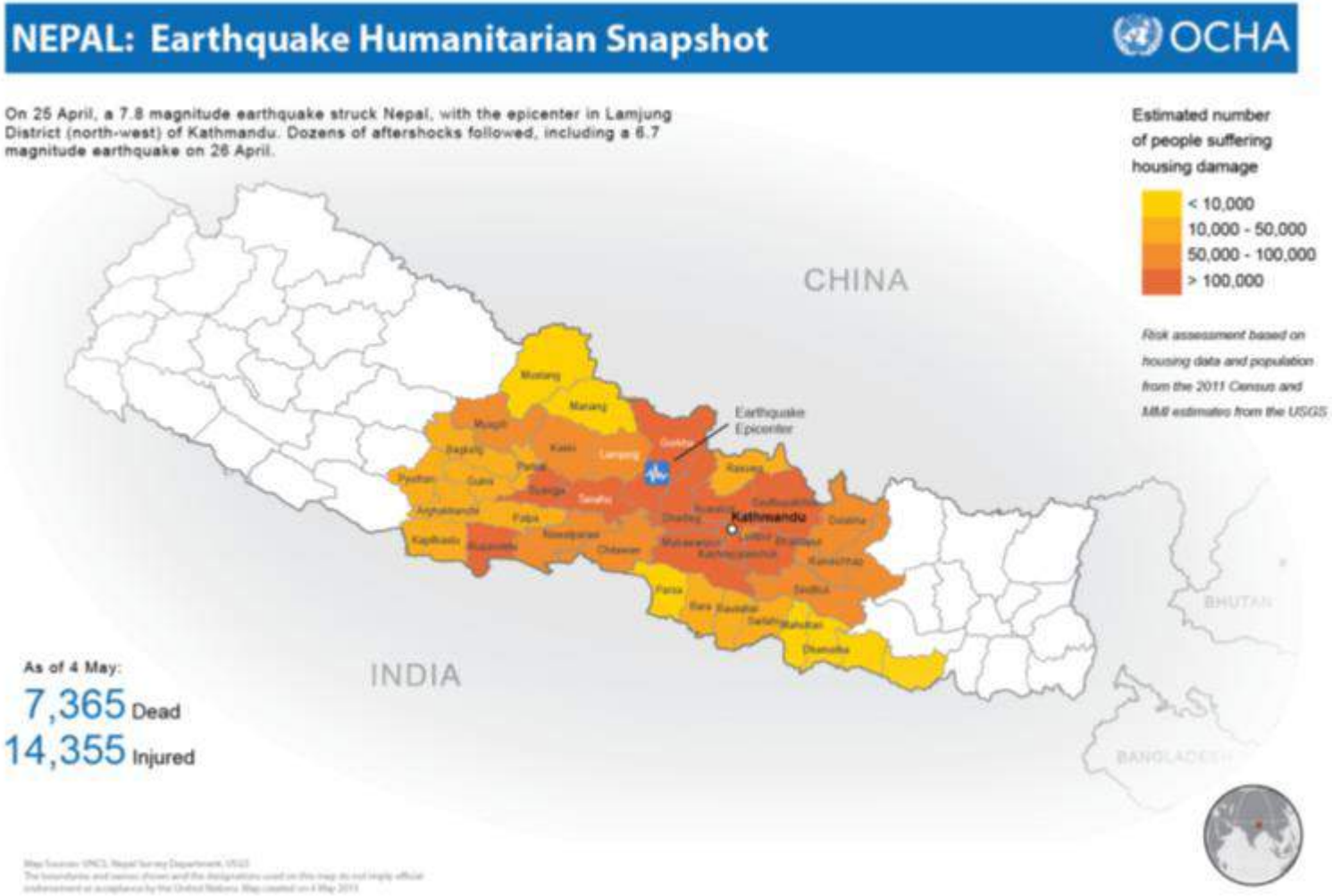
Nepal

OCHA

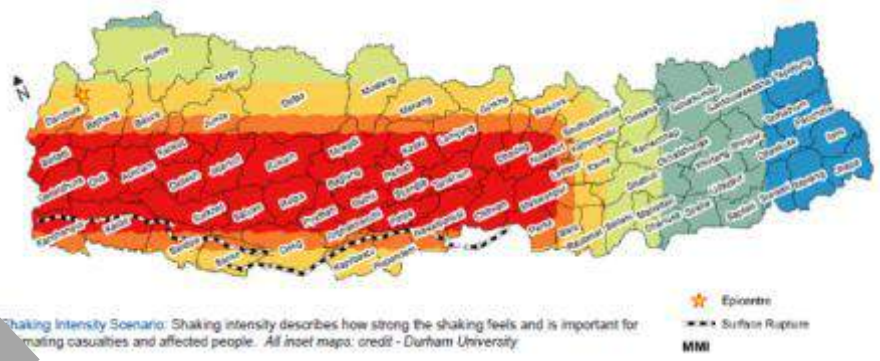
Nepal – Emergency Response

Regions	Districts	MoHAReported	ReportedDead	ReportedInjured	MapInferred	MMI (OCHA-MAP)	District-MMI	Severity (by aera)	DamageClass	AverageAffectedH	AffectedPOP	FinalAffected2	AffectedH2	VulHousehold (by foundation)	FinalAffected1
WR	Gorkha	Y	160	72	Yes	V-VI (25%), VI-VIII (75%)	VII (100%)	4	70%	40,572	165,361	40,828	58,326	87.7	40,316
WR	Tanahun	Y	1	14	Yes	VI-VIII	VI (50%), VII (50%)	4	70%	36,974	152,640	38,043	54,346	69.4	35,905
WR	Lamjung	Y	4	0	Yes	VI-VIII	VII (100%)	4	70%	22,901	91,284	23,535	33,621	79.9	22,268
WR	Syangja	N	0	0	Yes	V-VI (75%), VI-VIII (25%)	V (50%), VI (50%)	3	50%	28,086	117,900	28,551	57,102	82.9	27,621
WR	Kaski	Y	2	13	Yes	V-VI (50%), VI-VIII (50%)	V (50%), VI (50%)	3	50%	22,024	86,240	23,752	47,504	37.8	20,296
WR	Rupandehi	N	0	0	Yes	IV-V	VI (100%)	3	50%	20,940	112,445	22,375	44,749	27.3	19,506
WR	Nawalparasi	N	0	0	Yes	IV-V 25%), V-VI (50%), VI-VIII (25%)	VI (100%)	3	50%	16,099	80,439	15,648	31,297	24.3	16,550
WR	Myagdi	N	0	0	Yes	IV-V	VI (100%)	3	50%	12,389	50,712	12,507	25,014	90.1	12,271
WR	Manang	N	0	0	Yes	N/A	V (50%), VI (50%)	3	50%	645	2,849	681	1,362	92.0	6
WR	Gulmi	N	0	0	Yes	IV-V	V (100%)	1	10%	5,872	25,340	5,908	59,078	91.0	5
R	Baglung	N	0	0	Yes	IV-V	IV (25%), V (75%)	1	10%	5,522	24,108	5,543	55,431	90.1	
WR	Palpa	N	0	0	Yes	IV-V (50%), V-VI (50%)	V (100%)	1	10%	4,788	21,090	4,797	47,966	80.9	4,7
WR	Pyuthan	N	0	0	Yes	III-IV (75%), IV-V (75%)	IV (100%)	1	10%	4,405	21,054	4,425	44,246	92.7	4,38
WR	Arghakhanchi	N	0	0	Yes	IV-V	V (100%)	1	10%	4,096	17,283	4,061	40,606	86.7	
WR	Kapilbastu	N	0	0	Yes	III-IV (50%), IV-V (50%)	V (100%)	1	10%	4,119	25,794	4,201	42,008	46.0	4,
WR	Parbat	Y	5	0	Yes	V-VI	V (100%)	1	10%	3,124	12,819	3,154	31,540	88.3	3,09
WR	Mustang	N	0	0	Yes	IV-V	V (100%)	1	10%	306	1,227	314	3,143	93.7	297
CR	Kathmandu	Y	766	2399	Yes	VI-VIII	VIII (100%)	5	90%	66,957	267,654	73,044	81,160	18.6	60,870
CR	Dhading	Y	157	157	Yes	V-VI (75%), VI-VIII (25%)	VI (25%), VII (75%)	4	70%	44,458	202,312	44,820	64,029	86.7	44,096
CR	Sindhupalchok	Y	228	239	Yes	IV-V	VII (100%)	4	70%	42,620	183,932	42,994	61,420	92.1	42,247
CR	Nuwakot	Y	160	400	Yes	IV-V (50%), V-VI (50%)	VII (100%)	4	70%	38,300	179,468	38,632	55,188	93.2	37,969
CR	Lalitpur	Y	150	791	Yes	V-VI (50%), VI-VIII (50%)	VI (50%), VII (50%)	4	70%	24,556	104,698	25,901	37,002	33.7	23,211
MWR	Dang	Y	0	2	Yes	III-IV		1							
CR	Bhaktapur	Y	219	961	Yes	IV-V (25%), V-VI (50%), VI-VIII (25%)	VII (100%)	4	70%	19,290	85,622	19,795	28,278	41.2	18,786
CR	Rasuwa	Y	150	100	Yes	IV-V (50%), V-VI (50%)	VI (25%), VII (75%)	4	70%	6,037	26,733	6,140	8,771	89.7	5,934
CR	Kabhrepalanchok	Y	119	327	Yes	IV-V	V (50%), VI (25%), VII (25%)	3	50%	34,084	161,273	34,266	68,531	84.9	33,902
CR	Dolakha	Y	40	62	Yes	III-IV	VI (100%)	3	50%	21,279	86,889	21,496	42,992	94.1	21,062
CR	Ramechhap	Y	29	17	Yes	III-IV	VI (100%)	3	50%	20,978	96,814	21,187	42,373	96.5	20,769
CR	Makawanpur	Y	31	72	Yes	IV-V (75%), V-VI (25%)	VI (100%)	3	50%	20,800	101,545	22,135	44,269	51.4	19,465

Nepal – Emergency Response



Nepal – Contingency Planning



Shaking Intensity Scenario: Shaking intensity describes how strong the shaking feels and is important for estimating casualties and affected people. *All inset maps: credit - Durham University*

THE NEPAL EARTHQUAKE SCENARIO - ESTIMATED IMPACT

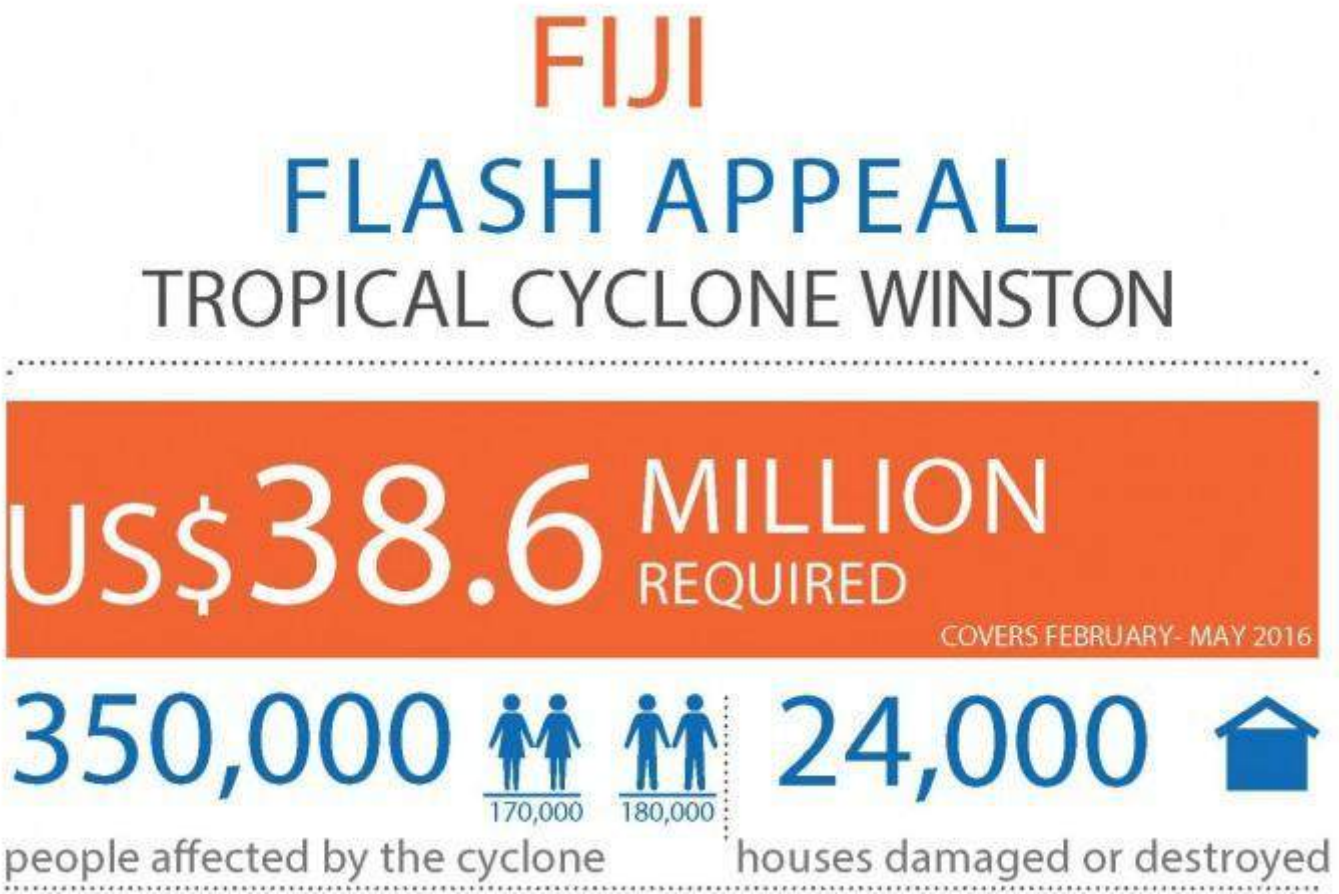
274,000	3.5 million	7.8 million
deaths	injured	people displaced

	Daytime EQ	Nightime EQ
Fatalities	191,000 (15,600)	274,000 (16,000)
Injuries	2,460,000 (176,000)	3,500,000 (173,000)
Displaced People	7,800,000 (488,000)	
Collapsed Households	812,000 (47,000)	
Collapsed Medical Sites*	50 (1)	
Collapsed Schools*	10,200 (590)	
Damaged Households	927,000 (79,000)	
Damaged Medical Sites	80 (1)	
Damaged Schools	26,700 (4,300)	

Figures in Parenthesis correspond to impact in the Kathmandu Valley

	Probability of collapse @ MMI				Probability of damage @ MMI				Fatality Rate
	6	7	8	9	6	7	8	9	
Adobe	2%	17%	48%	90%	4%	34%	96%	100%	0.06
Brick with mud motar	0%	1%	14%	45%	0%	2%	28%	90%	0.08
Brick with cement mortar	0%	1%	5%	15%	0%	2%	10%	30%	0.06
Reinforced concrete w/ brick infill	0%	0%	3%	11%	0%	0%	6%	22%	0.15
Wooden	0%	0%	5%	27%	0%	0%	10%	54%	0.02

Fiji


FIJI
FLASH APPEAL
TROPICAL CYCLONE WINSTON
US$38.6 MILLION REQUIRED
COVERS FEBRUARY- MAY 2016
350,000
170,000
180,000
people affected by the cyclone
24,000
houses damaged or destroyed

OK Great. So how do we do this?

Disaster Impact Modeling is all about **DATA**

- Baseline data (Common Operational Datasets)
  - Geographic / GIS data
  - Census data
- Data on Impact
  - Earthquake – Shake Map
  - Cyclone – Storm track
  - Floods – Flooded area / Sat images

- Just as important is data on VULNERABILITY, (Socio-economic, but also Spatial)

(examples: 4P, DAG)

- Some of us are already doing this (NDRCC)

What is the role of the Space Technology?

Preparedness

- Understanding Risk – the more we know the better estimates we can make
  - Which areas are most at risk?
  - Why?
  - Who lives there?
- Understanding Vulnerability – Areas that are chronically food insecure (NDVI)
- Disaster Modeling – How to estimate the impact of a disaster?

Response

- Measure actual Impact – Weather forecasts, storm track, flood monitoring
- Confirm assumptions – Sat images are good localized events (landslide, volcano, etc)
  - What can we do for large scale disasters? (crowd sourcing? Radar images)