

10iwsr, Sep. 25, 2013

## Site specific ground motion characteristics and building damage in Sendai area during the 2011 Tohoku earthquake



### Contents (I)

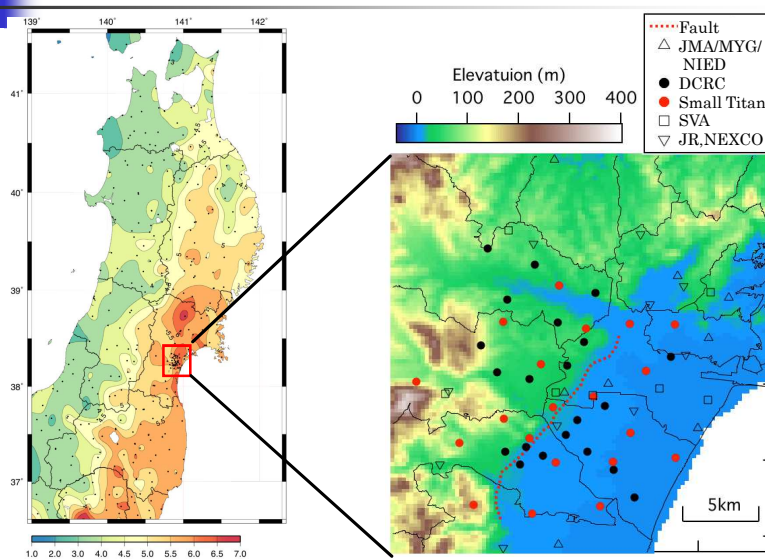
- Strong motion observation sites in Sendai area and Geological structure
- Ground Motion Characteristics in Sendai Area during 2011 Tohoku earthquake
  - ✓ Distribution of PGA, PGV, and spectra
  - ✓ Comparison of 1978 Eq. at same obs. Pt.
  - ✓ Site specific ground motion amplification and building damage
    - Oroshimachi on alluvial deposit
    - Nagamachi on alluvial deposit + deep structure
    - Aobayama hill

## Contents(II)

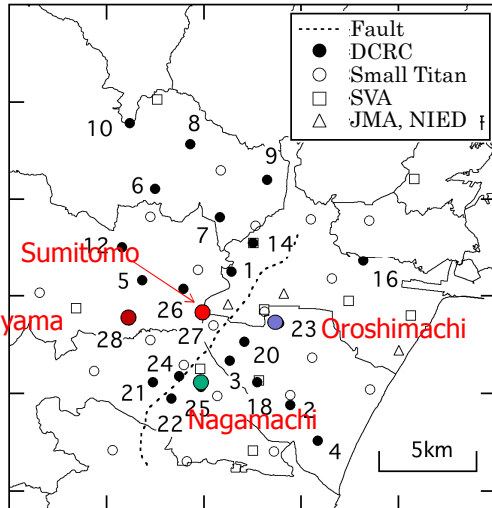
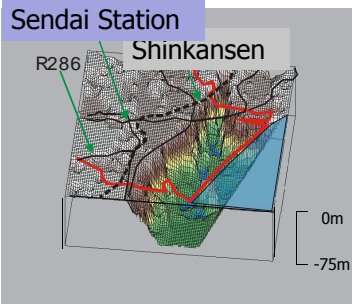
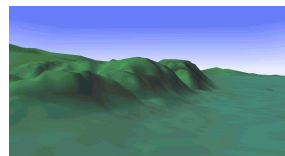
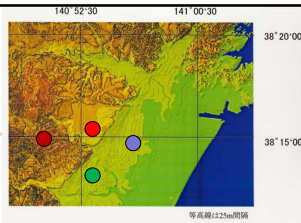
- Specific building damage
  - ✓ Pile foundation building
  - ✓ Non-structural elements
    - \*especially ceiling board drop
  - ✓ Housing land failure
- Impact of geological structure on non-linear response of building structures
- Conclusions
  - ✓ Lessons from the Tohoku Earthquake focused on ground motion and building damage

*Necessity of 'holistic' earthquake counter measures*

## Location of strong motion observation sites



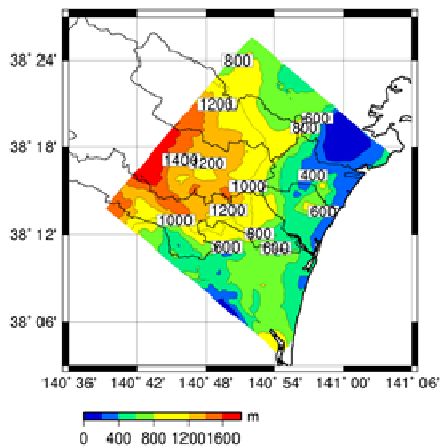
# Surface geology and obs. pts. of DCRC, Tohoku Univ.



# Deep Underground Structure in Sendai Area



Bedrock depth



Dominant period

