Research Center for Photovoltaics



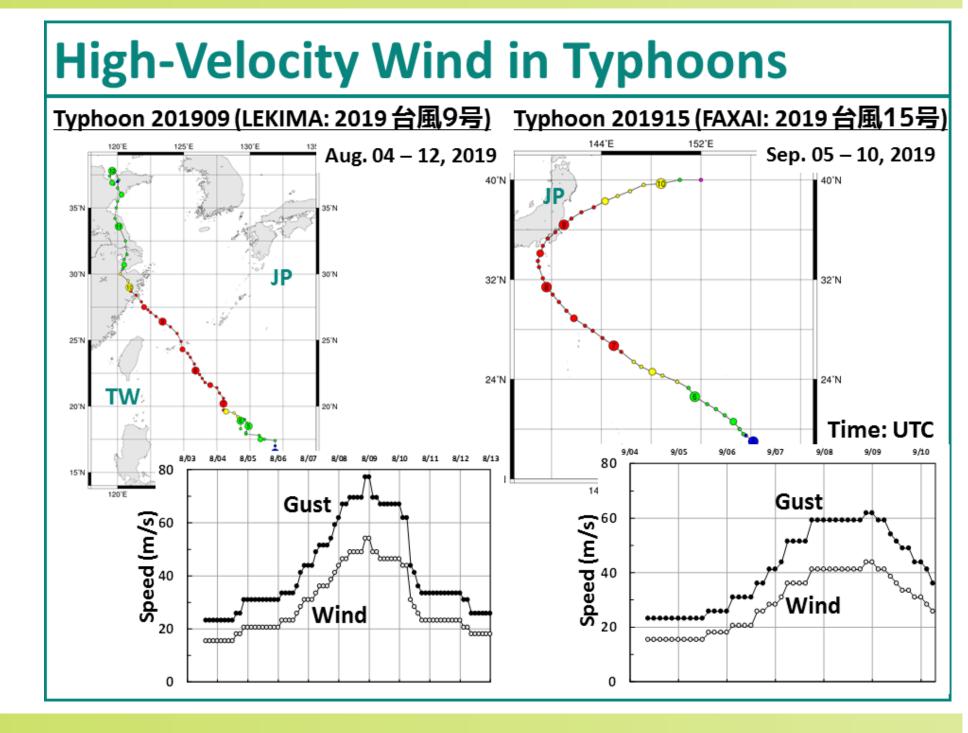
不均一荷重ストレスにより生じる 太陽電池モジュール内個別セルの電気特性変化 棚橋 紀悟¹、 Shu-Tsung Hsu² ¹產業技術総合研究所, ²Center for Measurement Standards, Industrial Technology Research Institute, Taiwan

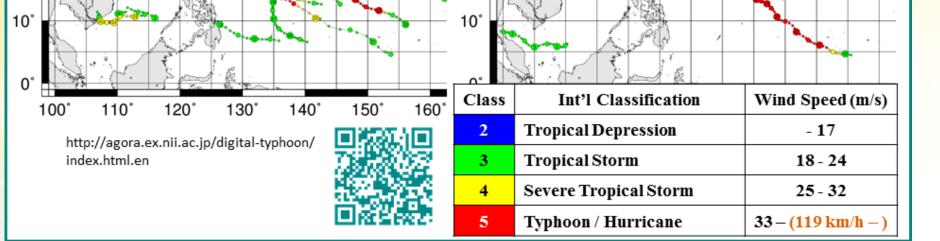
Background

Typhoons in Northeast Asia

29 Typhoons in 2018 : 7 Typhoons: over 54 m/s <u>19 Typhoons</u> in 2019 : <u>3 Typhoons</u>: over 54 m/s [~ Oct. 15] 160° 100° 110° 120° 130° 130° 140° 150° 2019

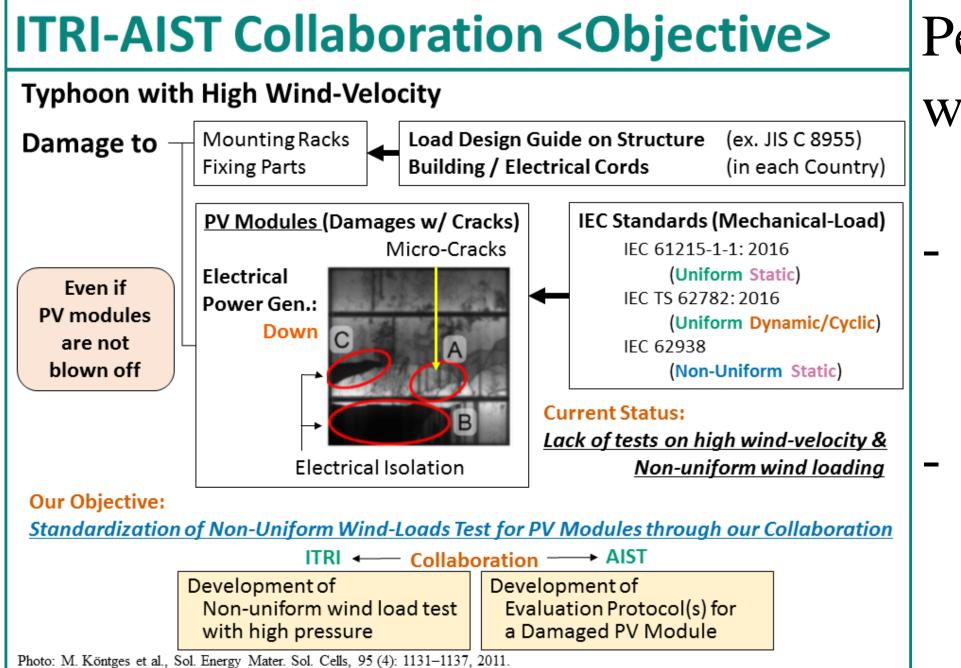
Damages by Typhoon 201821 6.5 MW PV Facility **Osaka "Nanko" Port (Coastal)** - Roof Top Mount - Frame-less G/G Modules **Damaged Modules:** 13,780 / 28,160 = ca. 50% ource: METI 2018/11/26







Objective & Summary



Performance degradation in the individual PV cells within a PV module with cell cracks, which are induced by non-uniform wind load test, was analyzed in AIST.

<u>A crucial cause of power-loss in the PV module with cell cracks (which are induced by</u> NUDML) was *the damage at p-n junction* in the individual PV cells.

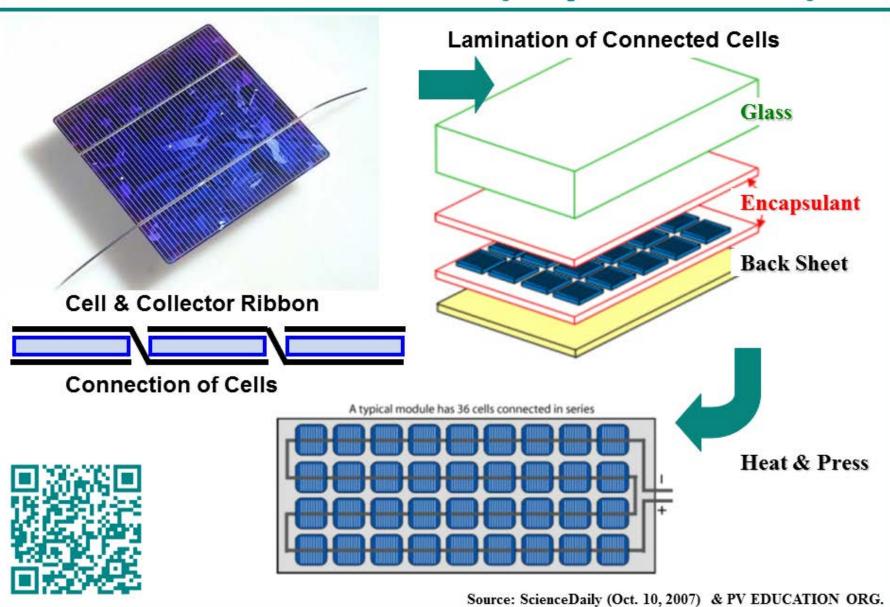
The combination of our achievements will be a powerful driver to establish an *international standard (test / evaluation protocols)* for the prevention of damage due to Typhoon / Hurricane / Cyclone with high-velocity wind.

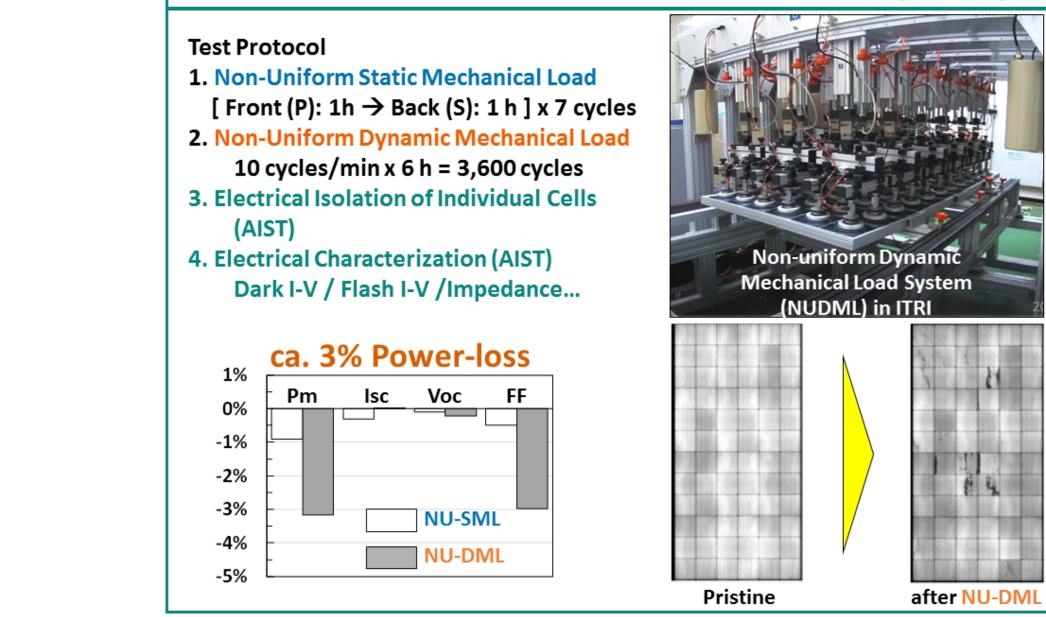
Experimental

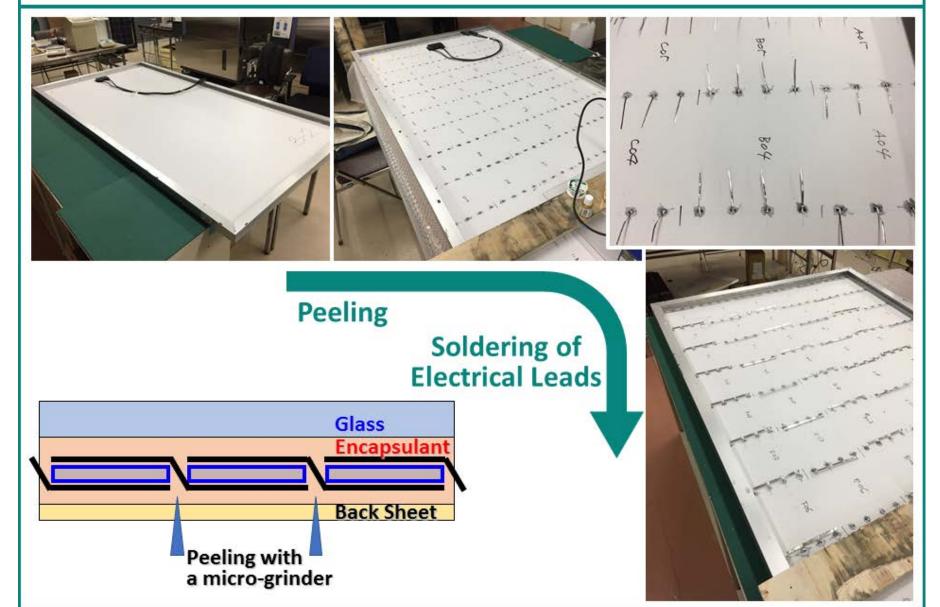
Non-Uniform Mechanical Load (ITRI)

Electrical Isolation of Individual Cells

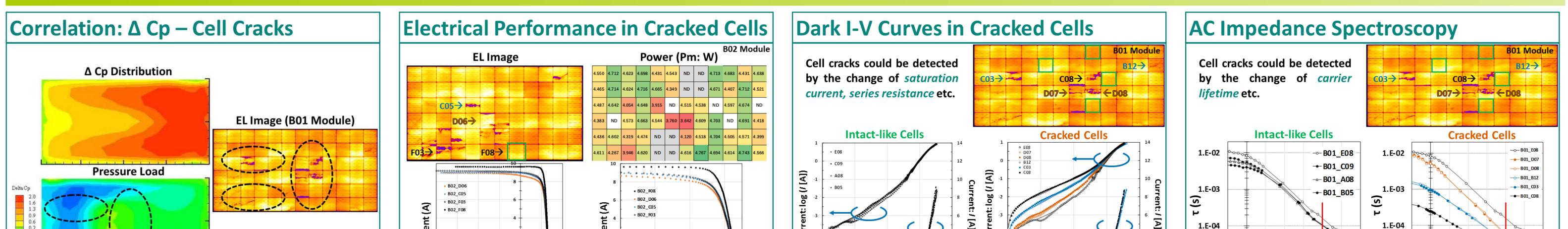


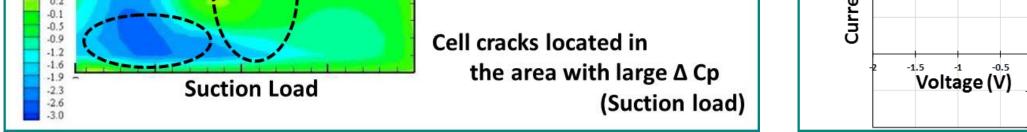


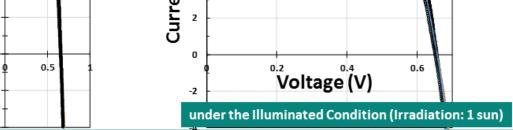


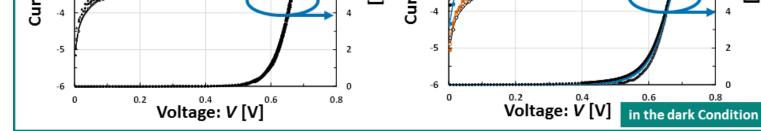


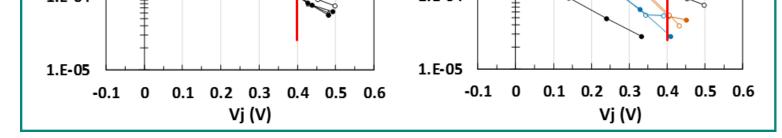
Results



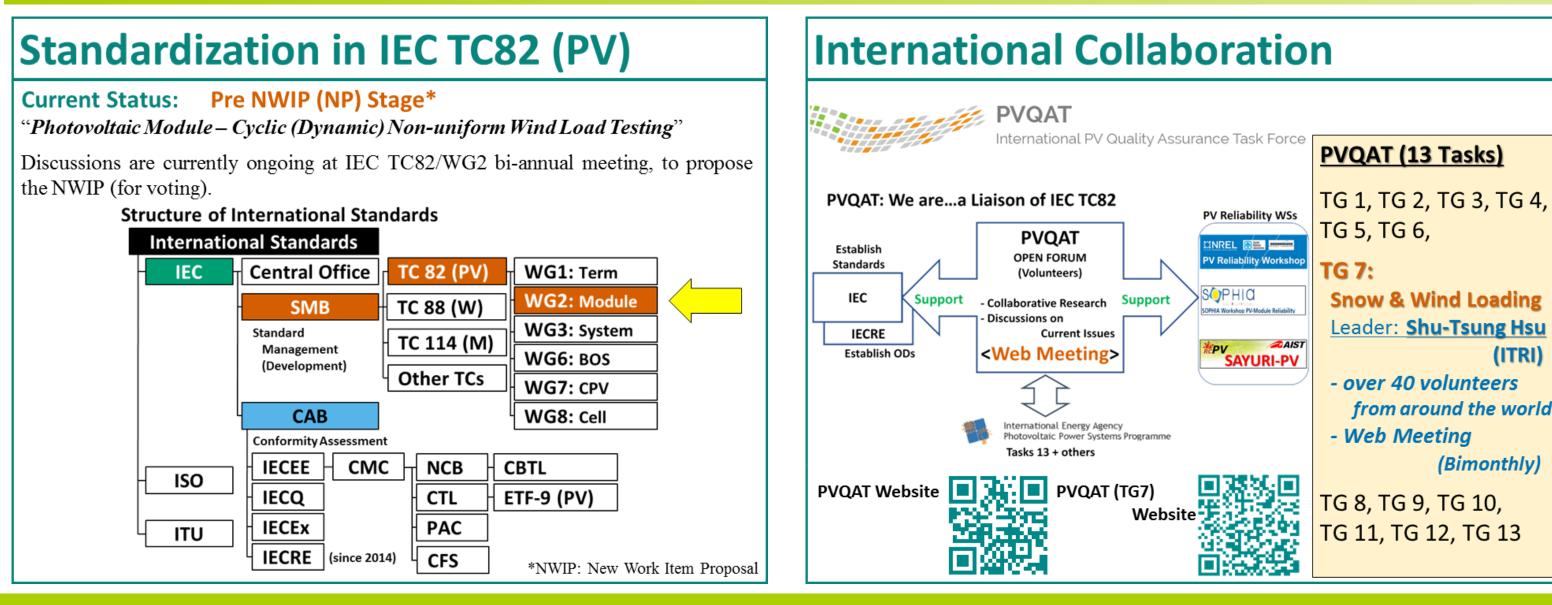








Standardization through Global Collaboration



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(ITRI)