

# Wind Engineering Joint Usage/Research Center FY2014 Research Result Report

Research Field: Wind Hazard Mitigation/Wind Resistant Design

Research Period: FY2014~FY2015

Research Number: 142002

Research Theme: Comparison and calibration of Tornado Simulators  
異なる実験装置で得られた竜巻状旋回流の相互比較実験

Representative Researcher: Prof. Horia Hangan

Budget [FY2014]: 680,000 Yen

\*If the research was not continuous, this will be the Final Result Report, so the contents of the report have to be detailed.

\*There is no limitation of the number of pages of this report.

\*Figures can be included to the report and they can also be colored.

\*Submitted reports will be uploaded to the JURC Homepage.

## 1. Research Aim

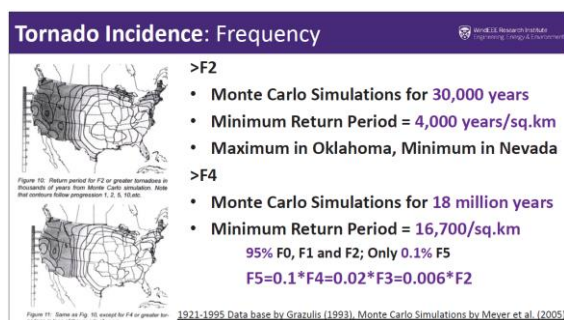
The objective of proposed joint research is to compare tornadic flow characteristics obtained with different experimental facilities.

## 2. Research Method

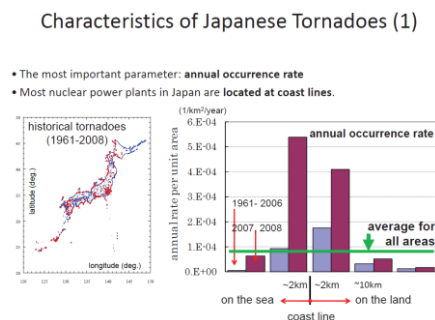
The first year, 2014: setting experimental conditions, preliminary experiment and exchange basic data between the Western University and Tokyo Polytechnic University.

## 3. Research Results

Information on tornadoes in U.S and Japan was investigated. Figure-1 indicates basic information on tornado occurrence in both countries. Facilities in Western University and Tokyo Polytechnic University have been compared in their scale, abilities.



(a) U.S



(b) Japan

Fig.-1 Tornado occurrence in U.S and Japan

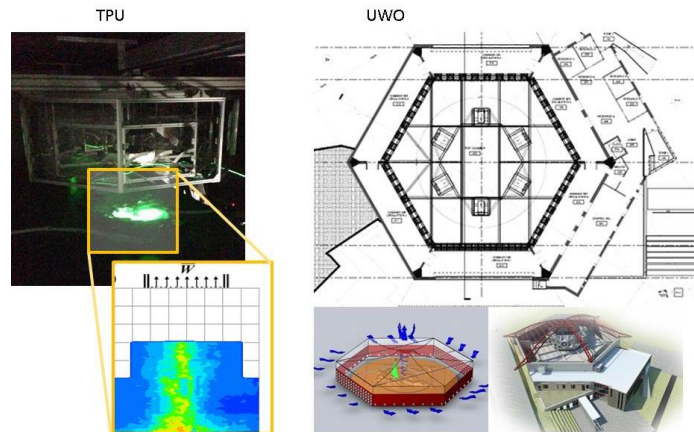


Fig.-2 Tornado-like-flow simulator in TPU and UWO

#### 4. Published Paper, etc.

Yukio Tamura, Masahiro Matsui, Seiszo Kawana, Fumiaki Kobayashi, Statistical properties of tornadoes in Japan and tornado risk model for nuclear power plants, 14th International Conference on Wind Engineering, Port Alegre, Brazil, 2015 (Submitted)

#### 5. Research Organization

##### 1) Representative Researcher

Horia Hangan University of Western Ontario, Canada, Professor

##### 2) Collaborate Researchers

Yukio Tamura Tokyo Polytechnic University, Japan, Professor

Masahiro Matsui Tokyo Polytechnic University, Japan, Professor

Akihito Yoshida Tokyo Polytechnic University, Japan, Associate Professor

Rei Okada Tokyo Polytechnic University, Japan, GCOE Associate Professor

#### 6. Research workshop

TPU WE-JURC Special Open Seminar, Advanced structural wind engineering, March, 14, 2015, organized by JURC TPU, co-sponsored by Japan Association for Wind Engineering (JAWE), Architectural Institute of Japan (AIJ), Japan Society of Civil Engineers (JSCE)

#### References