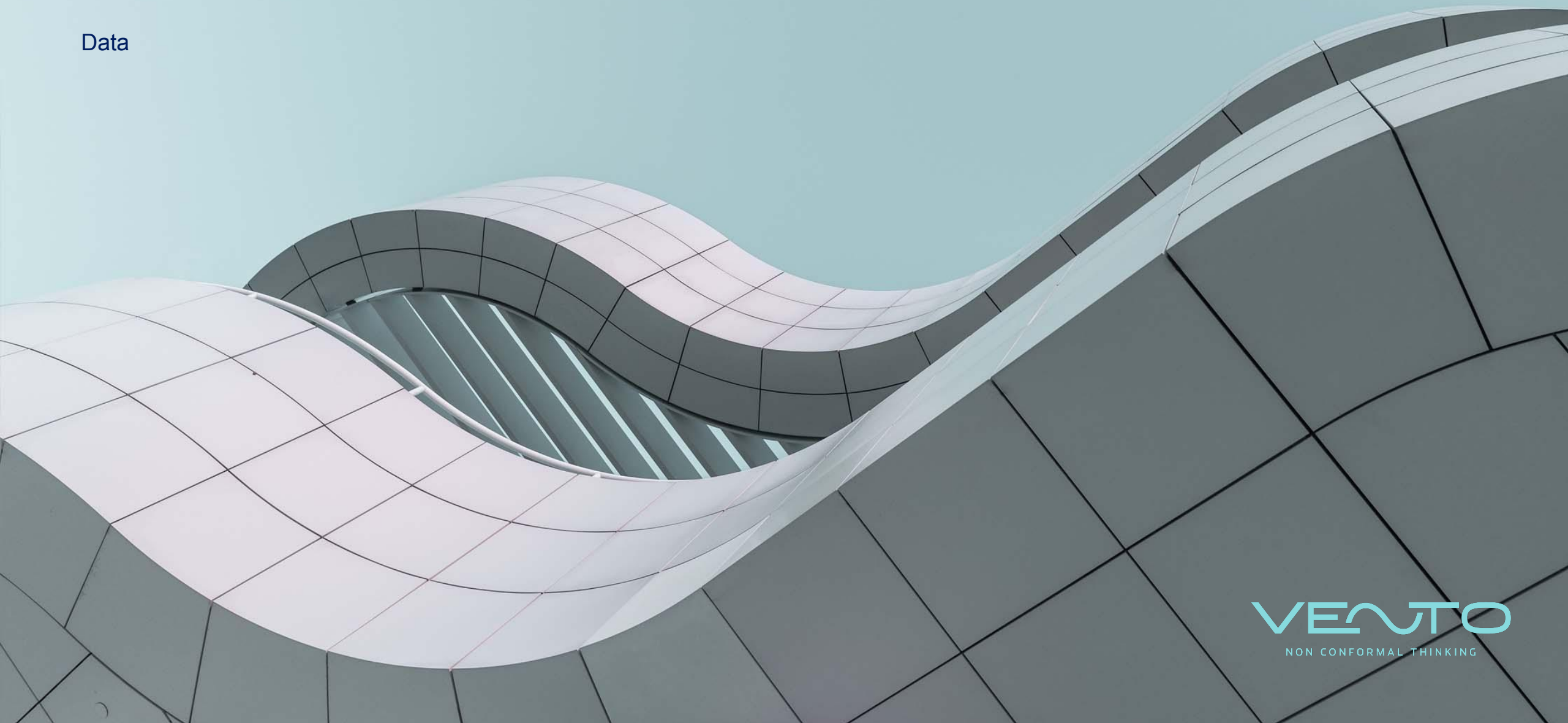
VENTO

NON CONFORMAL THINKING

Innovative CFD for the built environment

Validation | Tall Building

Data



VENTO
NON CONFORMAL THINKING

Reference

11th Americas Conference on Wind Engineering – San Juan, Puerto Rico
June 22-26, 2009

Computational evaluation of wind pressures on tall buildings

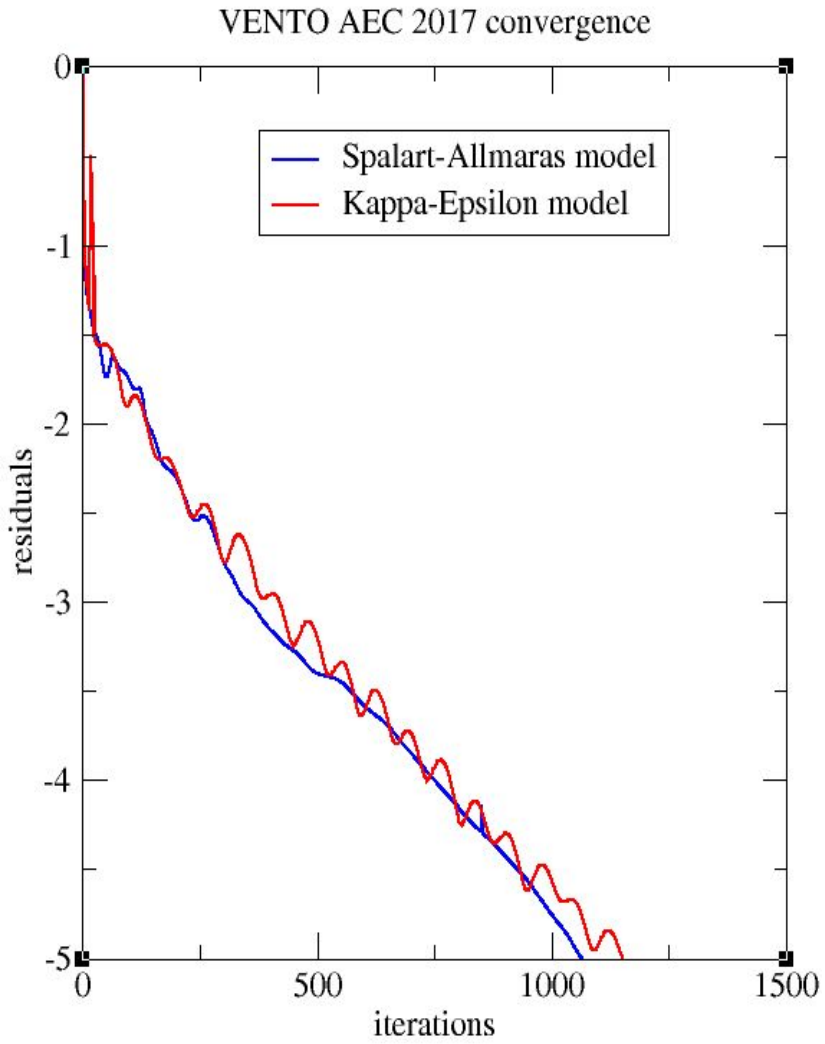
Agerneh K. Dagnew [1], Girma T. Bitsuamalk[2], Ryan Merrick[3]

[1] Research Assistant, Civil and Environmental Engineering department (CEE), International Hurricane Research Center (IHRC), Florida International University (FIU), Miami, Florida, USA, adagn001@fiu.edu

[2] Assistant Professor of Wind/Structural Engineering, CEE, IHRC, FIU, Miami, Florida, USA bitsuamg@fiu.edu

[3] Senior Technical Coordinator, RWDI USA LLC, Miramar, Florida, USA, Ryan.Merrick@rwdi.com

VENTO CFD simulation



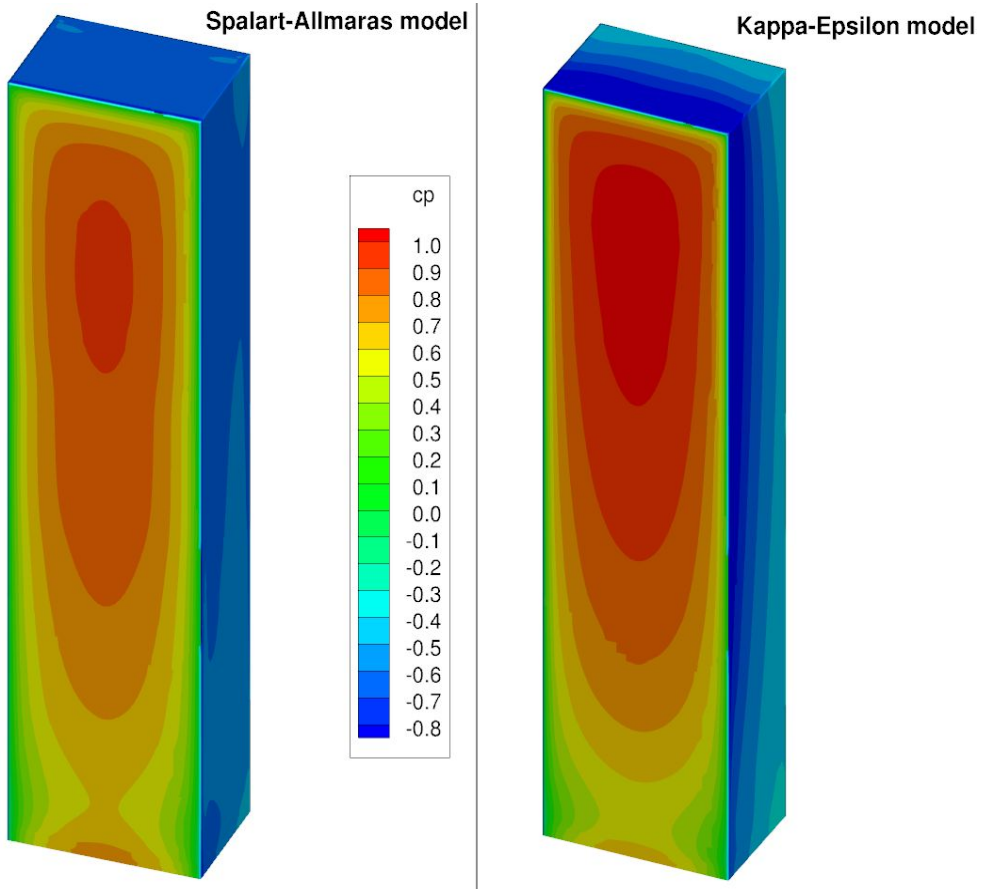
The analysis was carried out on a grid of **950k cells** and by using **2 turbulence models.**

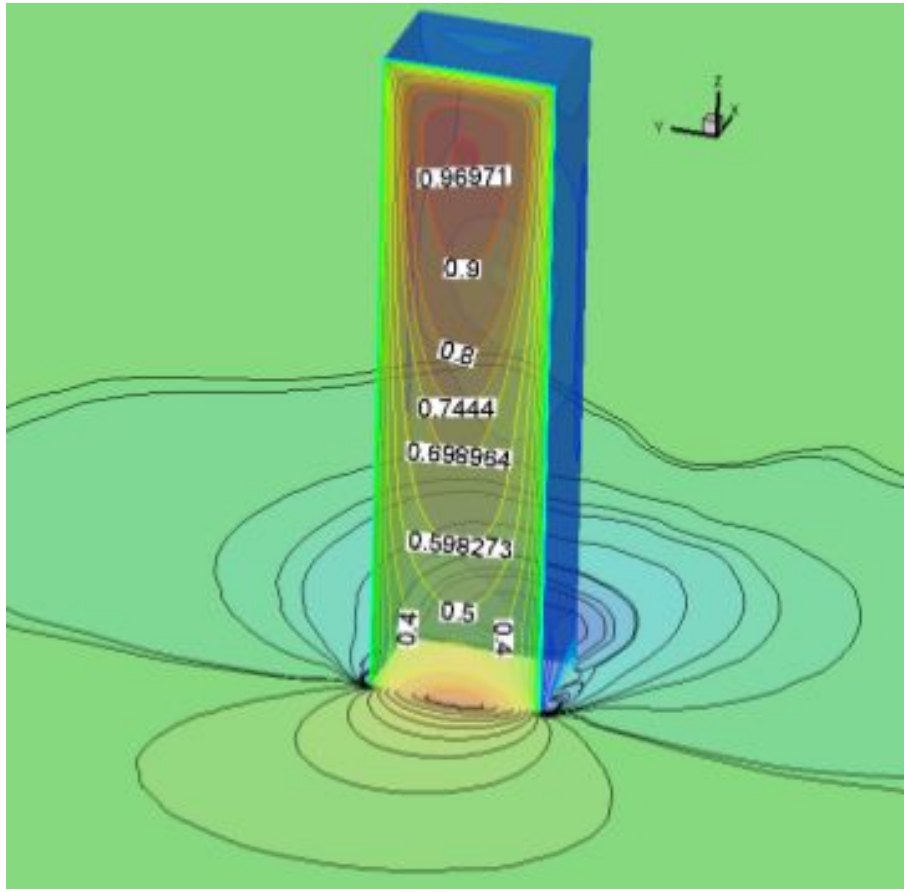
model	Set-up (*)	Simulation (&)
SA	10'	70'
K-eps	3'	81'

(*) time from STL import to CFD-ready status

(&) simulation time on a 4-core desktop

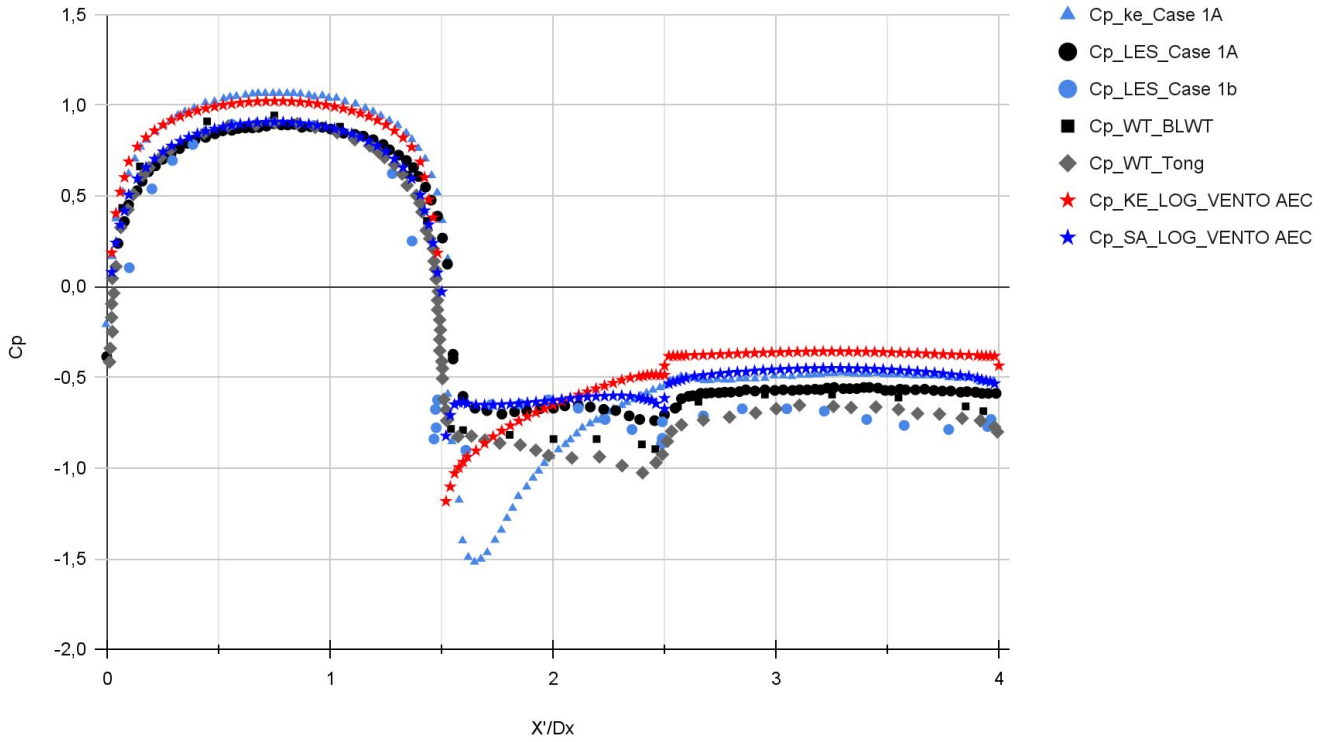
VENTO results vs reference



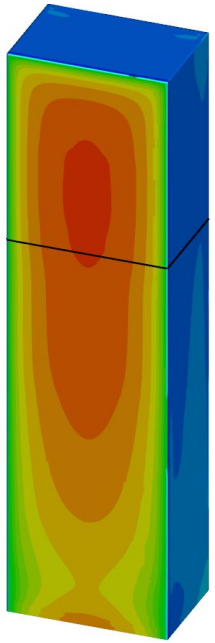


Map of CP distribution on the windward side: VENTO AEC (left) and reference (right)

VENTO results vs reference



CP distribution over the building perimeter at z/H=2/3



It is interesting to notice that the two results obtained by using the k-eps turbulence model (VENTO and the reference paper) show the same tendency to **overestimate the maximum CP on the windward side,** as well as the **maximum depression around the corner** (though to a different extent).


VENTO
NON CONFORMAL THINKING