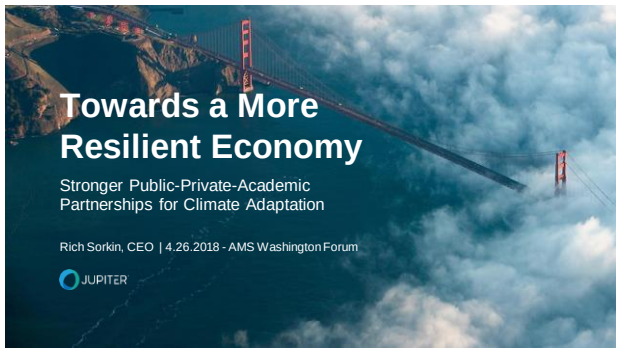

Introducing Jupiter

Probabilistic view of physical risks arising from weather events and climate change at the asset level

Cross sector integration of best practices:
- Scientific modeling
- Cloud/Scale computing
- Machine learning

Global coverage by 2020 for all major perils and drive meaningful business and policy action.

Earth & Ocean Science Leadership

Services

FloodScore

- Predicts expected flood level in any designated area and time frame
- NYC, South Florida, Charleston, and Houston first
- 2 hours to 50 year time horizon
- Probabilistic or scenario based
- Factors in storm intensification, sea level rise, and infrastructure changes
- Highly localized: asset to region
- City block resolution

HeatScore

- Predicts expected heat in any designated area and time frame
- New York City, Arabian Peninsula, and LA first
- 2 hours to 50 year time horizon
- Probabilistic or scenario based
- Factors in rising global temperatures and changing precipitation patterns
- Highly localized: asset to region
- 2 meter resolution

Public data is the foundation for building resiliency

$306B

Weather and climate disasters in US (2017)

Actionable data key to building the Resilience Economy

Continued demand for long-term, stable, and accurate records

The private sector catalyzes climate adaptation

- **Meets increasing demand** for higher temporal and spatial resolution data on urban and mesoscales
- **Provides business expertise** to help transform climate information into business value and public goods

The weather enterprise generates $5B in revenue from the private sector compared to NWS's ~$1B budget

Jupiter closes the gap

JUPITER

Models	Methods / Tools	Observational Datasets	Reanalysis	Forecast
• WRF • COAMPS • ICAR • WRF-HYDRO • USACE-HEC-HMS / RAS 2D • SLOSH • ADCIRC + SWAN • GEOCLAW • sECOM / POM • TCRM • WRDFA • DART • GSI • HEC-HMS / RAS	• LIMs • LOCA downscaling • MET • GIS mapping • ARMA • Pairwise v erification • Regional correlations • Multi-scale statistics • Adv anced spatial statistics • Multiple linear regression • Extreme v alue theory • Fourier decomposition • Data Quality Assurance • Changepoint Detection • Trend Analy sis	**Sea Level** • PSMSL tidal gauge data • 1-min CO-OPs H_2O level data • GLOSS DM HF datasets • TOPEX / JASON-1,2,3 • SARAL • Landsat-8 / Sentinel-2 • GRACE grav itational data • Arctic Sea Ice **Cyclones** • HURDAT2 cy clone database • IBTrACS int'l cy clone database **Hydrologic** • USGS riv er gauge data **Precipitation** • CPC global precip. • GPCP global precip. • GPCC global precip. • GHCN precip. + temp. • USCRN-Geonor precip. • CO-OP precip. • CoCoRAHs precip. network • TRMM satellite precip. • Stage IV precip. • CRN precip. + temperature **Heat Stress** • USHCN • ASOS / AWOS • State + regional mesonets • Weather Underground	**Atmosphere / Land** • ERA-40 / Interim • MERRA • JRA-55 • NCEP-R2 • NARR • CFSR • NLDAS **Ocean** • HADISST • ORAS4/5 • SODA • RAPID (AMOC) • Argo	**Climate Simulations** • CMIP • NCAR LENS **Seasonal - Decadal** • IRI / CPC • Copernicus • NMME • NCAR

By providing benefits across the ecosystem

Enterprise	Finance	Government
• Site selection	• Investing	• Redevelopment
• Design requirements	• New insurance	• Public health
• Mitigation strategy	• Catastrophe bonds	• Building guidelines
• Ongoing assessment	• Underwriting decisions	• Flood prevention
• Operational risks	• Energy markets	• Citizen communication
• Shareholder disclosures	• Asset allocation	• Zone adjustments

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How the public sector can help

- **Consistent, comprehensive, & practically feasible access** to observational data and modeling outputs
- **Ongoing funding & support** for agencies, research institutions, and academic organizations to build a vibrant and healthy climate research community
- **Foster innovative business models** to provide data in ways advantageous to both the public and private sectors

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