Weather in the Cockpit
A safety and operational breakthrough!

Captain Rocky Stone
Chief Technical Pilot
United Airlines
Weather in the Cockpit

A game changer!

- Updates while airborne via data-link
  - Situational Awareness - no longer limited to the preflight weather briefing
  - Graphical updates while airborne
  - Much more effective than voice or textual updates via Flight Watch or Dispatch
Why work on Meteorological Data Link Standards?

- Market forces have already created weather data link systems
  - Will these existing data links get us where we want to go?
- The process to approve new weather products for use on data links systems is cumbersome
  - Weather science has advanced to the point where there are many new weather products
- New data links standards can spur innovation by streamlining the operational approval process
Examples of Meteorology data link applications:

- Strategic decisions to deviate around convective weather (efficiency):
  - EFB displays with long range convective weather
  - Allows for strategic decisions with our dispatchers
  - Gives pilots a better tool to advocate for a more efficient solution

- Turbulence avoidance (safety):
  - Graphical Turbulence Guidance
  - Turbulence Remote Sensing
    - NCAR’s NEXRAD Turbulence Detection Algorithm
  - Oceanic Cloud top uplinks
Longer range weather – beyond the airborne weather radar
An Example of convective weather reroute savings

- Flight plan time = 3:45
- Actual flight time = 3:20
Turbulence remote sensing: in-cloud turbulence
Oceanic cloud top uplinks:

Both Display formats available with EFB

Current ACARS display
Conclusions

- New weather products are on the horizon that have the potential to improve operational efficiency and increase safety.
- Weather data link standards are needed to spur the development of these new products and reduce the time for them to become operational data link products.
Thank You!

Captain Rocky Stone  
Chief Technical Pilot  
United Airlines  
Flight Standards and Technology  
7401 E. Martin Luther King Blvd.  
Denver, CO 80207 USA  
1 (303) 780-3812  
rocky.stone@united.com