The 2014 Upgrade to the Lightning Warning Circles Used by 45th Weather Squadron

William P. Roeder    Todd M. McNamara    Mike McAleenan
Katherine A. Winters    Launa M. Maier*    Lisa L. Huddleston*

45th Weather Squadron    *KSC Weather Office
Cape Canaveral Air Force Station, FL    Kennedy Space Center, FL

PREVIOUS LIGHTNING WARNING CIRCLES

GOALS:
• Streamline warning process
• Reduce areal overlap of some circles
• Reduce temporal overlap of issued warnings
• Increase, or at least maintain, safety
• Minimize increased over-warning

RESULTS:
• 13 circles of 5 nmi radius changed to
  10 circles of 5 or 6 nmi circles
  • 23% improvement
  • 5 nmi radius for small single facilities
  • 6 nmi radius for multiple close facilities or single large facility
• 10 highly overlapping circles on CCAFS/KSC changed to 7 less overlapping circles
  • 30% improvement

FUTURE WORK:
• Refine Lightning Warning Circles Further
  • Combine Pads 40/42/37 and ITL into one circle
  • Use one standard safety distance rather than two radii for lightning warning circles
• Develop new safety distance based on edge of lightning field
• Automate lightning warnings for locations on CCAFS/KSC not covered by warning circles
  • Integrate smart phones with GPS, Total lightning detectors, and Wait-Time since no lightning within a standoff distance