

## THE AURORA BOREALIS<sup>©</sup> *by Dan Pemble, Kissimmee, Florida (2/28/16)*

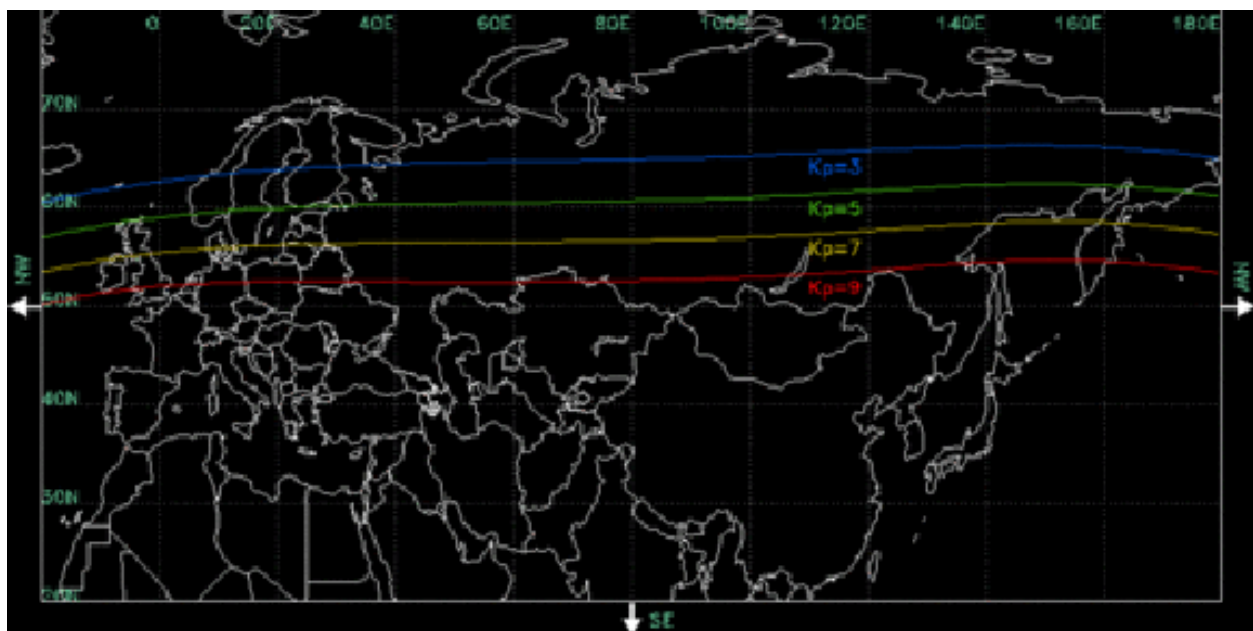
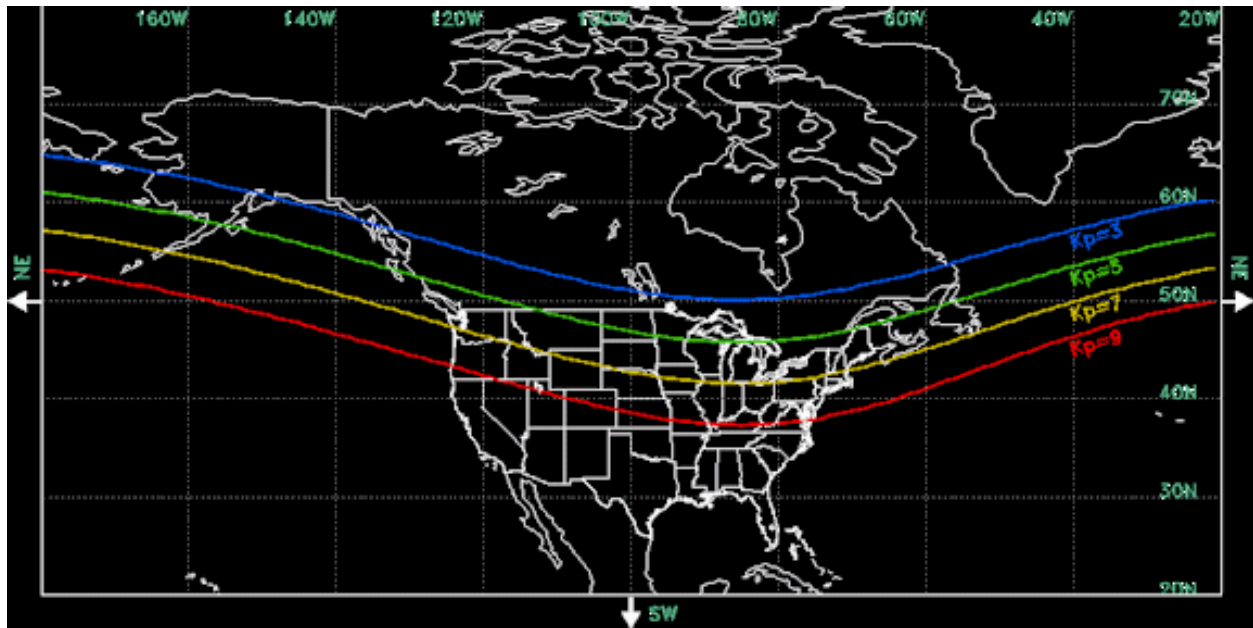
*Today when I cranked up my computer to see what's what on the internet, I found the following astonishing photo of the Aurora Borealis ("Northern Lights") over the Pacific Northwest; the photo was taken by astronauts aboard the space station. The photo served to immediately "ignite" my curiosity to learn more and to re-awaken some of my very own special memories in observing the aurora - from years gone by; so, now I want to share everything with YOU!*



**The Aurora Borealis Over the American Pacific Northwest**

Did you know that the aurora actually occurs (simultaneously) within both the earth's northern and southern hemispheres? It does indeed; in the southern portion of the globe it is known as "Aurora Austris" (Southern Lights). In both areas of the earth, the aurora, as sometimes referred to as "dancing lights" in the sky, is caused by the same atmospheric phenomena. In the simplest of descriptions for what produces auroras: particles liberated by solar (sun) winds are influenced by the earth's magnetic field, and when ionized in the upper atmosphere, produce/reflect various colors of light! Enough said! (This article is not intended to be a scientific discussion!)

The maps on the following pages (borrowed from a Wikipedia site) show the extremities in which the northern lights can be observed in North America – outside the auroral zones of the northern-most areas of the globe where auroras are the most prominent and readily viewable during key times of the year. The second map shows similar areas in northern Europe.



(Maps From Wikipedia)

Without going into a detailed technical discussion, “geomagnetic storms” can temporarily enlarge auroral areas (the areas in which auroras can be seen). The colored bands shown on the above maps equate to levels of geomagnetic activity that are required before auroras can be seen. Kp=3 is a low level of geomagnetic storms versus Kp=9, a higher level. Please have a close look at these maps for your location. Simply stated, the farther south you are from the primary auroral display area (north of the Kp=3 band), the more intense the geomagnetic activity must be to enable viewing of the aurora.

## MY EXPERIENCES

No. 1: During my younger years I resided with my parents in Estherville, Iowa, a small town in the northwestern corner of the state. When I was at the formidable age of 12 (in 1957), we lived immediately adjacent to the combined elementary/junior & senior high school/junior college Roosevelt school building where I was in the 7<sup>th</sup> grade. As was the case for all similar multi-story buildings in those days, the Roosevelt had a set of metal stairs for a “fire escape” hanging off the side of its brick construction. During this time of my life, I often needed some private space just by myself to clear my thinking! Consequently, I very often found my own space by scaling the afore-mentioned fire escape stairs and sat for some time on the roof of the Roosevelt building! (The song “Up On The Roof” is one I can still relate to today!) On many, many occasions while sitting on the roof I observed and marveled at the mystery and true brilliance of the northern lights pulsating and dancing all over the sky in multiple colors; these experiences did indeed light up my life, provided a sense of curiosity and wonderment in me, and, above all, instilled feelings of peace and serenity. I really don’t know if my fellow Iowans at the time also enjoyed seeing the beauty of the northern lights – or not?

No. 2: During 1994-1998, as a McDonnell Douglas Support Services Representative, I resided in Oslo, Norway and provided technical support in maintenance, engineering, and operations issues related to Scandinavian Airlines Systems DC-9, MD-80, and MD-90 aircraft. During October of 1996, I accompanied SAS’s Director of Flight Operations, their MD-90 Chief Pilot, and a Flight Operations Engineer to Long Beach, California to accept delivery of one of their new MD-90 airplanes. After accepting the airplane, the 3-leg flight plan was to fly from Long Beach to Montreal (a 5-hour flight) and remain overnight in Montreal. The second leg was a 5-hour flight from Montreal to Keflavik, Iceland, and the 3<sup>rd</sup> leg was a shorter flight to Oslo. The 2nd and 3rd-leg flights took us well inside the arctic circle and for several hours while flying at 35,000 feet we observed the aurora borealis like I had never seen it before! I saw every color of the rainbow and the lights were so intense, it was like a full moon! This was an almost indescribable experience indeed and caused me to re-live my original aurora observations from many years ago!

The beauty of nature goes on and I hope that you too have seen or will see the aurora!



(Arctic Circle Photo from a Web Site)