

DX'ing 101

Antennas, Propagation & Equipment for Effective DX'ing

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Hey, how far can you talk
on that radio?

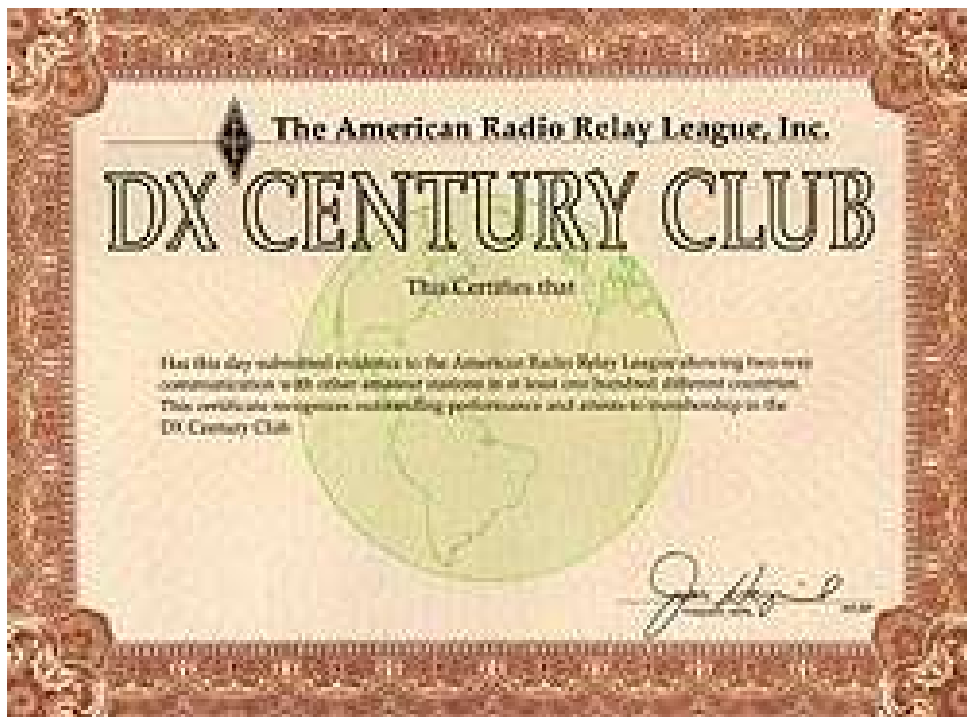




Well.....that depends!



DXCC



- The DX Century Club is the premier operating award in all of Amateur Radio.
- The basic certificate is awarded for working and confirming at least 100 entities on the ARRL DXCC List.



The First 100

- Working your first 100 DXCC entities is challenging but not difficult.
- Contest weekends will offer lots of DX
- Even a casual operator can “stumble” onto DX



101 to 200

- Working the next 100 countries presents more challenge.
- Develop good listening skills
- Pay attention to operating styles
- QSL routes are important



Over 200 and the Rare Ones

- As you collect more countries finding new ones becomes more challenging
- Stay informed of DXpeditions and events
- Pay attention to spotting networks
- Call CQ DX often



Antennas

What is the best antenna for DX'ing

- Small Tri-band Yagi ?
- Big Monobanders ?
- Vertical or Wire antennas ?
- Small tower or mast ?
- Tall Tower ?
- Phased Verticals ?



Antennas

What is the best antenna for DX'ing



Antennas

What is the best antenna for DX'ing

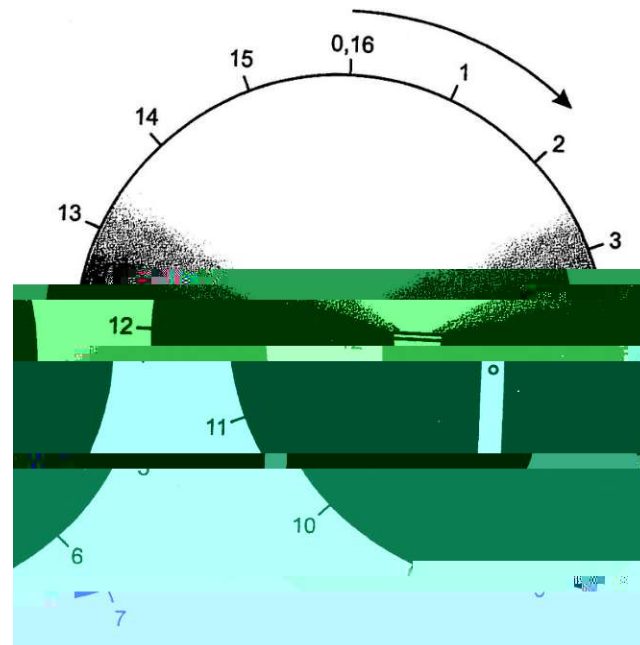
Well, that depends !



Antennas

What is the best antenna for DX'ing

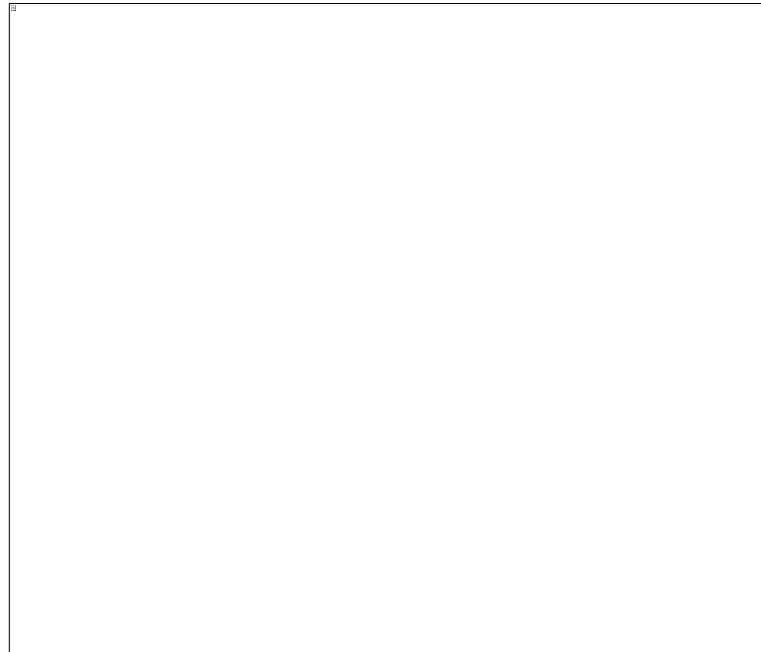
Remember just like a light in the dark, antennas have a specific pattern



Antennas

What is the best antenna for DX'ing

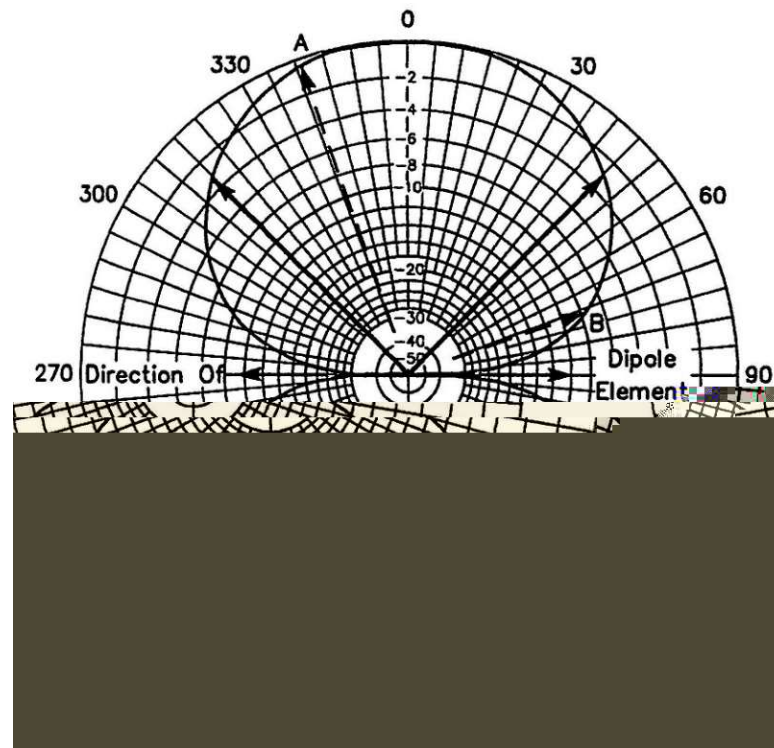
A dipole in free space will radiate 360 degrees



Antennas

What is the best antenna for DX'ing

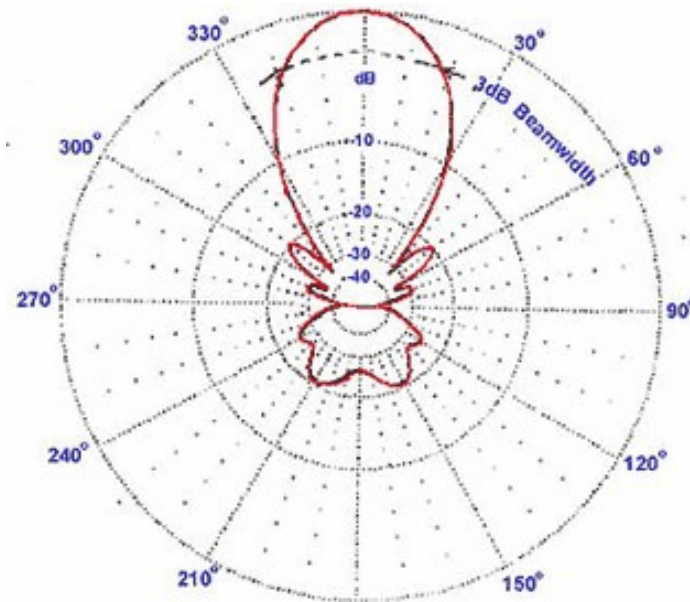
Place it over ground and it has a more distinct pattern:



Antennas

What is the best antenna for DX'ing

Add a parasitic element or two and you improve the pattern:



Propagation

What is the best time to work DX

Well, that depends !!



Propagation

Why do we care?

- Bottom line: We want to:
 - Maximize distance
 - Maximize countries paths)
 - Have fun
- Propagation conditions determine band openings
 - What band(s)
 - When
 - To where
 - Quality of openings (signal strength, arrival angles)
- All stations being equal, we win by exploiting more openings



Propagation

Where does the data come from?

- Predictive Software
 - Based on empirical and theoretical models
 - Inputs
 - time & date
 - QTH
 - solar parameters (flux/SSN, A index, K index)
 - frequencies
 - Output
 - path openings as function of time and freq
- Empirical
 - experience and Conventional Wisdom



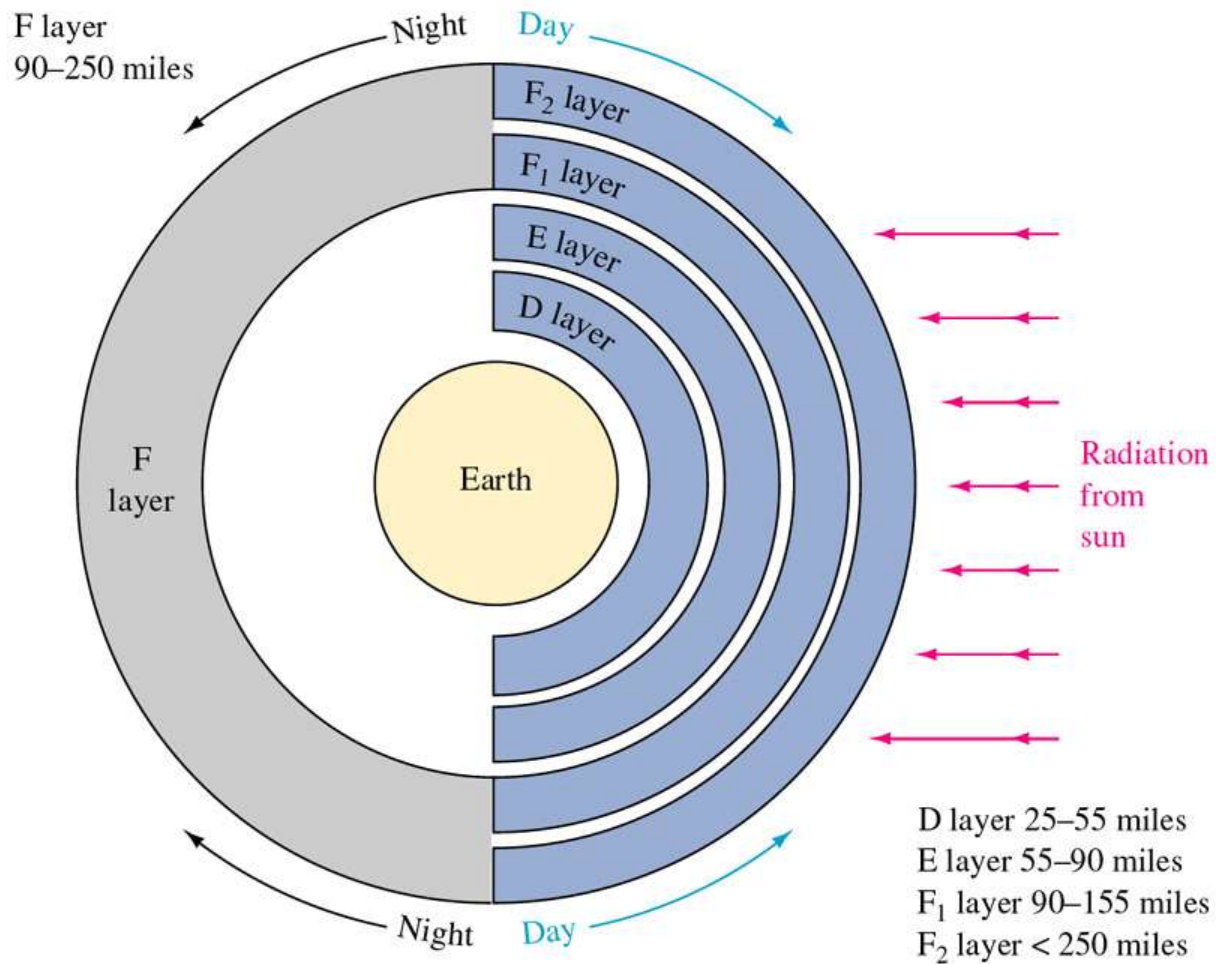
Propagation

How do we use it?

- Operating strategy
 - Know your band openings
 - ‘General’ openings for your QTH
 - EU: morning – high bands
 - Specific details per time of year and solar cycle
 - 15m to EU: open at 1000Z or 1300Z?

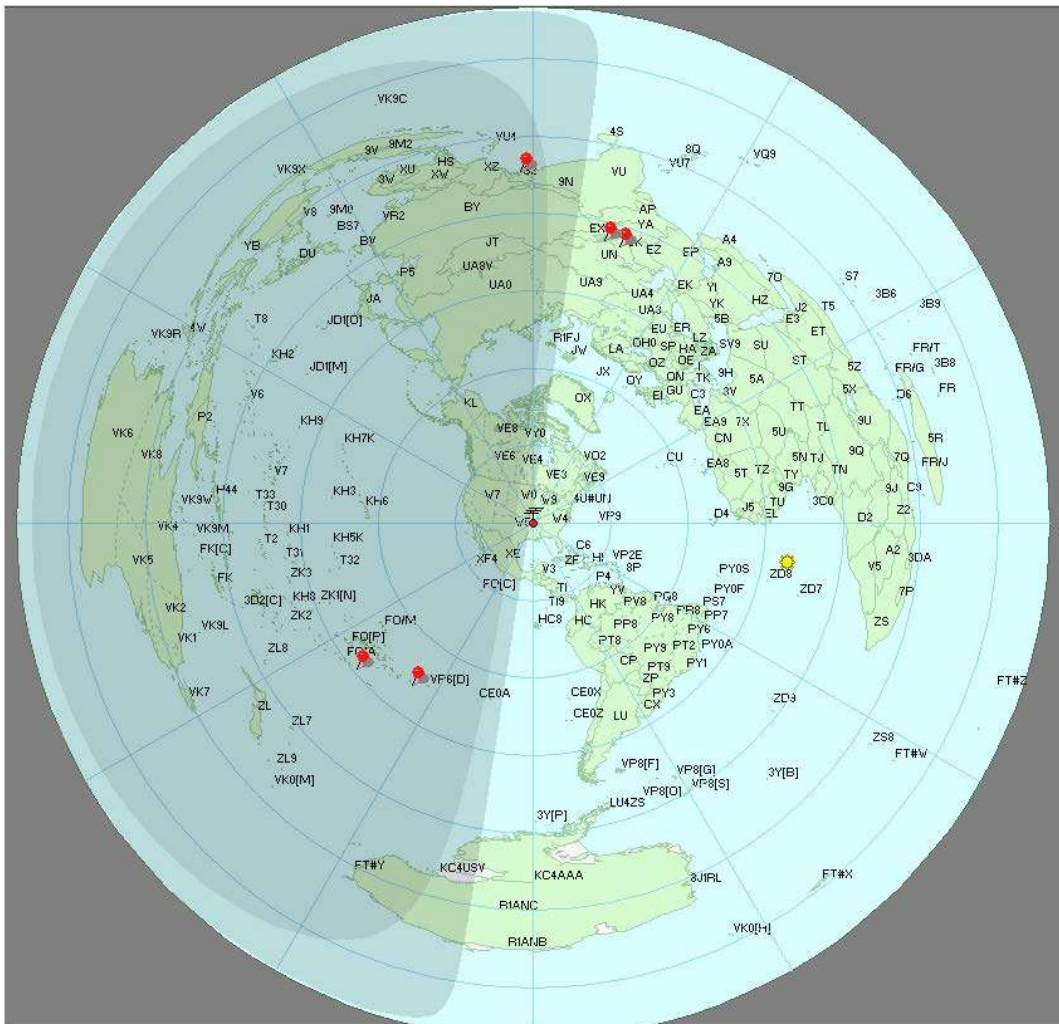


Quick review – skywave propagation



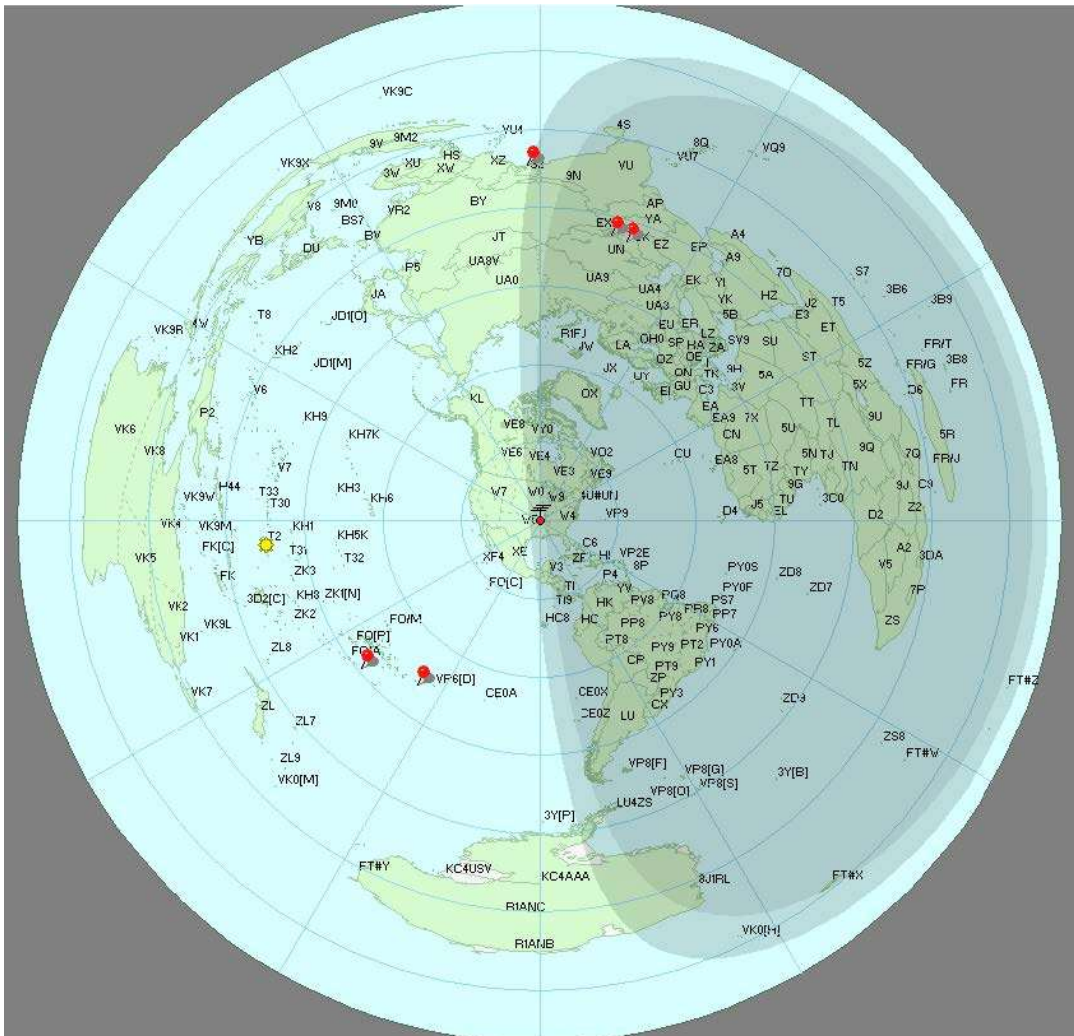
Propagation

How do we use it?



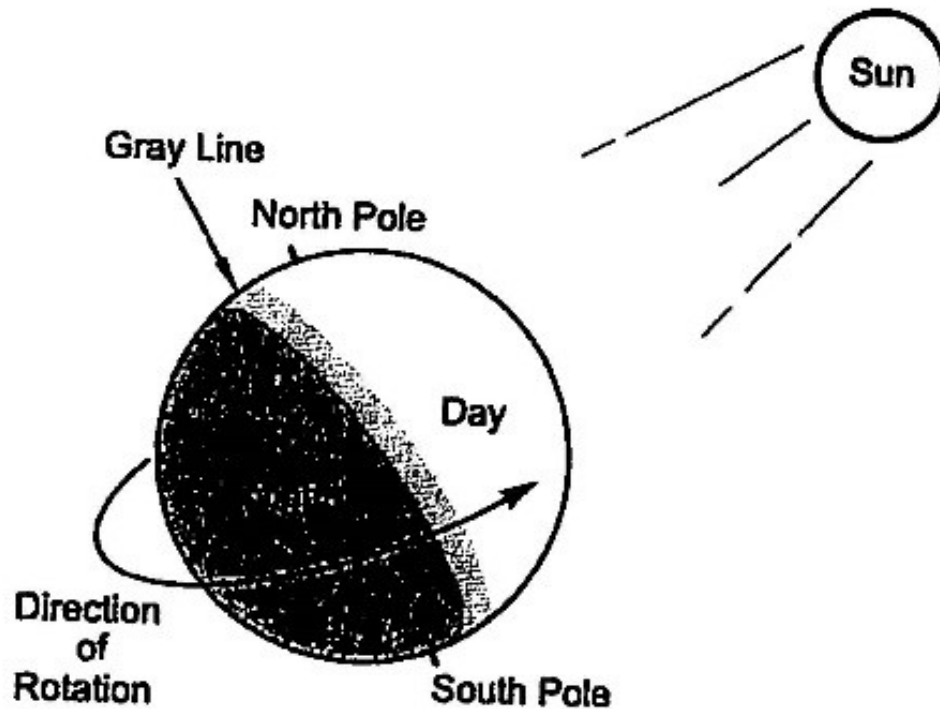
Propagation

How do we use it?



Propagation

What is the gray line?



The Sun

- 11-year sunspot cycle
- 27-day rotation period
- Daily parameters
 - Solar flux, A index, K index
 - From WWV [SH/WWV on packet]
 - web site



Signal Arrival Angles and Your Antennas

- DX
 - Typically low: $0^\circ - 30^\circ$
 - Need high yagis (at least $\lambda/2$, λ pref.) or verticals (gain a plus)
- Local
 - Typically higher: $20^\circ - 90^\circ$
 - Lower dipoles or other horiz-polarized antennas
- An antenna *can be too high*



Equipment

Operators with modest stations can work
a lot of DX

Patience

Persistence

Luck



Equipment

What is the best radio to use?



Equipment

What is the best radio to use?

Well, that depends !



Equipment

Transceivers

Dynamic Range

Passband Filters

“Good Ears Hear Weak Stations”

What do all those specifications
mean anyway?



Equipment

Noise

What's underneath all that racket?



Equipment

Noise

What's underneath all that racket?



The Operator

Good DXers develop good
Listening Skills



Dayton

Contest University

Thu, May 18, 2017
Crowne Plaza Hotel
Dayton, Ohio USA

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Contest University will be held on Thursday May 18, 2017, from 7:00am to 5:00pm, at the Crowne Plaza Hotel in Dayton, Ohio. This is the day before the Dayton Hamvention officially opens. Don't miss this rare opportunity to gain knowledge that may take you years of practice, trial and error or lost time to learn otherwise. Get the edge to improve your scores and put your station in the winners circle today!

Registration Fee includes:

- ✓ Full day of training and knowledge enhancement, for both beginners and advanced contesters, taught by veteran Contesters (see list of CTU Professors and Topics below).
- ✓ Breakfast Buffet and Boxed Lunch on Thursday.
- ✓ Coffee and Cookies during break.
- ✓ Printed Textbook and Class Notes. Access to color slide decks.
- ✓ Handouts, Catalogs and a CTU carry bag.
- ✓ Personalized "Certificate of Completion" (suitable for framing!)
- ✓ You are also invited to the Wednesday Night Pizza Party.



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- ✓ Joel Harrison, W5ZN
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