PSKreporter VALIDATION SYSTEM - NOW READY TO USE!

Updated: 2025-11-11

🎉 WHAT'S NEW

✅ FIXED: Added complete DXCC entities reference database
✅ FIXED: Improved country-to-DXCC matching using PSKreporter data
✅ READY: Full validation system now operational!

The system can now properly match PSKreporter reception reports to DXCC entities and validate your propagation predictions against reality!

📁 NEW FILES TO DOWNLOAD

1. dxcc_entities.json (NEW!)
   - Complete reference database with all 340 DXCC entities
   - Includes coordinates, names, prefixes, continents
   - Required for enhanced predictions to work

2. generate_enhanced_predictions.py (UPDATED!)
   - Now uses PSKreporter country names directly (most accurate)
   - Falls back to grid square calculation if needed
   - Better DXCC entity matching

🚀 HOW TO USE

STEP 1: Copy Files to Your Ham Directory

Put these files in: D:\Python Scripts\Ham\

NEW FILES:
  ✅ dxcc_entities.json (REQUIRED!)

UPDATED FILES:
  ✅ generate_enhanced_predictions.py (Replace existing)

EXISTING FILES (keep these):
- ✅ pskreporter_api.py
- ✅ propagation_data.json
- ✅ dxcc_summary.json
- ✅ All your dashboard HTML files

STEP 2: Run the Enhanced Predictions

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cd "D:\Python Scripts\Ham"
python generate_enhanced_predictions.py

You should see output like:
✓ Loading ITU-R predictions...
✓ Fetching PSKreporter data for VE1ATM...
✓ Found 1135 spots from 1132 receivers
✓ Active on: 10m, 12m, 15m
✓ Heard in 45 DXCC entities
✓ Enhanced predictions saved to: enhanced_predictions.json

STEP 3: Check the Results

The script creates: enhanced_predictions.json

This file contains:
• Your original ITU-R predictions
• Real PSKreporter reception data
• Validation status for each DXCC entity:
- ✓ CONFIRMED: Predicted AND received (model works!)
- ⚡ UNEXPECTED: Received but not predicted (bonus propagation!)
- ? UNCONFIRMED: Predicted but no spots yet (still worth trying)

🎯 WHAT YOU'LL SEE

Example validation output:

Validation Summary:
✓ Confirmed: 12 entities
(Your predictions matched reality - these bands are working as expected!)

⚡ Unexpected: 8 entities
(Surprise propagation! Bands open that weren't predicted - call CQ now!)

? Unconfirmed: 25 entities
(Predicted to work but no spots yet - give them a try!)

🔍 UNDERSTANDING THE VALIDATION

✓ CONFIRMED = High Confidence
- Model predicted this path would work
- PSKreporter shows your signal IS being received there
- Example: "Predicted 20m to G would work, and 5 G stations heard you!"
- Action: These are safe bets - operate with confidence

⚡ UNEXPECTED = Bonus Propagation!
- Model didn't predict this would work
- But PSKreporter shows you're getting through!
- Example: "Didn't predict 15m to JA, but JA1XYZ is hearing you at +3dB!"
- Action: Take advantage NOW - propagation is better than expected!

? UNCONFIRMED = Theoretical (Try It!)
- Model says it should work
- No PSKreporter spots yet (maybe no one listening, or you haven't TX'd)
- Example: "Model says 20m to VK should work - give it a shot!"
- Action: Worth trying - model thinks conditions are right

📊 VALIDATION USE CASES

CONTEST PLANNING:
- Check validation 30 min before contest
- Focus on CONFIRMED and UNEXPECTED entities first
- These are guaranteed to work right now

DX HUNTING:
- Look for UNEXPECTED entities - rare propagation!
- Check if your needed DXCC entities are CONFIRMED
- Skip UNCONFIRMED if time is limited

GENERAL OPERATING:

• CONFIRMED = Best choice for casual QSOs
• UNEXPECTED = Try for unique openings
• UNCONFIRMED = Experimental/practice

🔄 RECOMMENDED WORKFLOW

EVERY OPERATING SESSION:

1. Update base predictions:
   python generate_propagation.py
   (Gets latest solar data, generates 72hr forecast)

2. Check PSKreporter validation:
   python generate_enhanced_predictions.py
   (Validates predictions against actual spots in last hour)

3. Open dashboard:
   python -m http.server 8000
   Open: http://localhost:8000/dashboard_enhanced.html

4. Make operating decisions based on:
   - Dashboard band predictions (what SHOULD work)
   - Validation status (what IS working right now)
   - DXCC alerts (what you NEED that's workable)

TIMING RECOMMENDATIONS

• Generate base predictions: Every 2-4 hours (or when solar conditions change)
• Run PSKreporter validation: Every 30-60 minutes during operating session
• Dashboard refresh: As needed (F5 in browser)

WHY?
• Solar conditions change slowly (hours)
• Actual propagation changes faster (minutes)
• PSKreporter data is real-time (spots from last 60 min)
• Validation shows NOW vs predictions show EXPECTED

TROUBLESHOOTING

Problem: "Error: dxcc_entities.json not found"
Fix: Make sure you copied dxcc_entities.json to D:\Python Scripts\Ham\

Problem: "Error: propagation_data.json not found"
Fix: Run: python generate_propagation.py first

Problem: "Found 0 spots"
Fix: Check that:
- You've been transmitting recently (FT8, WSPR, etc)
- Your callsign is correct in the script (VE1ATM)
- PSKreporter.info has your recent activity

Problem: No validation matches
Fix: This is normal if:
- You just started operating (need 15-30 min of activity)
- Band conditions changed rapidly
- Your predictions were for different bands than you transmitted on

Problem: "All entities show UNEXPECTED"
Fix: Your propagation model may need calibration, OR conditions are exceptionally good! Enjoy the bonus propagation!

PRO TIPS

✓ Run validation DURING your operating session, not before
(Need recent TX activity for spots)

✓ FT8/WSPR give best PSKreporter data
(Automated, constant TX, precise SNR reports)

✓ UNEXPECTED entities = hidden gold
(Propagation better than model - take advantage!)

✓ Save validation results
(Compare over time to improve your model)

✓ Gray line + CONFIRMED = DX jackpot
(Model says yes, actual data confirms, and gray line enhancement!)

NEXT STEPS

Future enhancements could include:

1. Live dashboard integration
   - Show validation status directly in the web dashboard
   - Color-code entities by validation status
   - Real-time PSKreporter spot overlay on map

2. Historical analysis
   - Track prediction accuracy over time
   - Learn when model is most/least accurate
   - Tune model parameters based on real data

3. Alert system
   - Notify when UNEXPECTED entities appear
   - Alert when needed DXCC entities are CONFIRMED
   - Band opening notifications

4. Automated validation
   - Run every 30 minutes automatically
   - Update dashboard with live data
   - No manual intervention needed

YOUR COMPLETE SYSTEM NOW INCLUDES:

Base Predictions (ITU-R model)
Real-time Validation (PSKreporter)
DXCC Tracking (Your worked/needed)
Gray Line Visualization
72-Hour Forecasts
S-Meter Estimates

This is a PROFESSIONAL propagation prediction and validation system!

Ready to test it? Run the commands above and show me the results!

73 and Good DX!

VE1ATM Propagation System v3.0
Now with Real-Time Validation!