HFTA

HF TERRAIN ASSESSMENT

KEN MILLER – WB1DX

AGENDA

Introduction

What is HFTA

Key Features

Benefits of HFTA

Configuration

Demo

INTRODUCTION

- Ken Miller – WB1DX
- Licensed in 1987 (KA1PIO)
- YCCC, QVARC, HCRA
- 8 band DXCC
- SkyWarn, ARES
- My main interest has always been working DX

WHAT IS HF TERRAIN ASSESSMENT (HFTA)?

- Developed by Dean Straw, N6BV
- First appeared in the 20th edition of the ARRL Antenna Handbook – 2003 – Dean Straw editor
- Model performance characteristics of HF antennas taking terrain and antenna height into consideration
- Understand how terrain influences antenna performance at a particular height in the 3-30 MHz frequency range

KEY FEATURES

- Antenna Selection: Users can select various antenna types and heights to analyze their radiation patterns.
- Terrain Profiles: The software utilizes 360-degree terrain profiles, centered around the antenna site, showing how terrain in a particular direction helps or hurts antenna performance on a specific HF bands.
- Elevation or Take Off Angle profiles: HFTA provides success rates across various takeoff angles, essential for targeting specific regions or DX areas.

BENEFITS OF USING HFTA

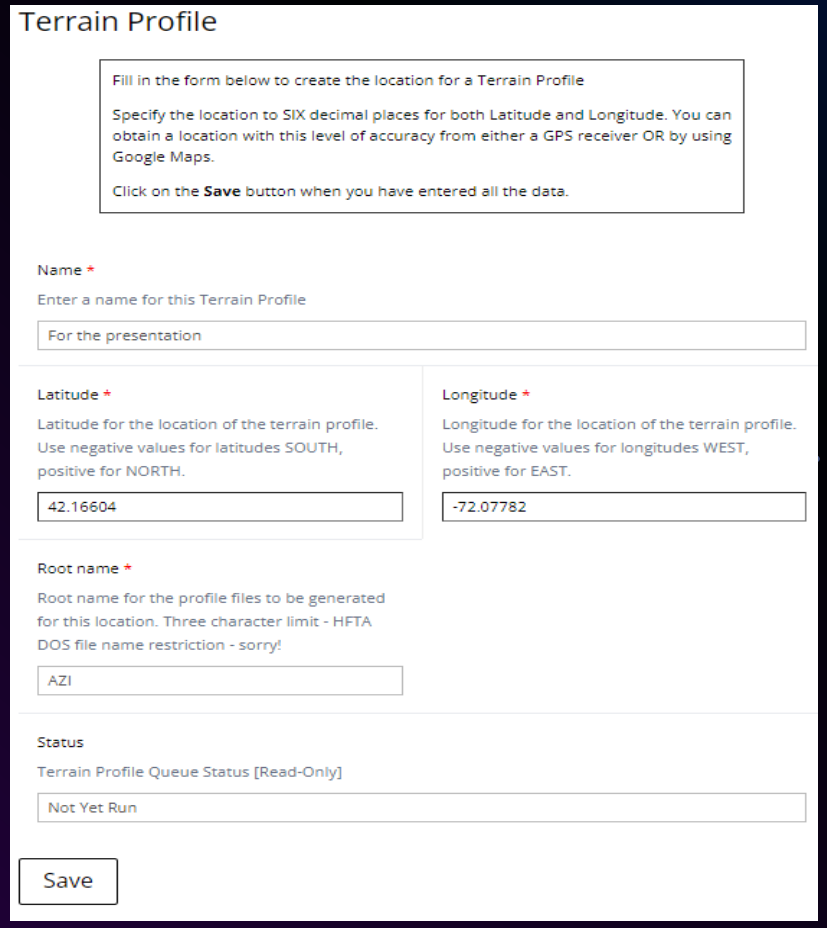
- Improved Station Planning: By identifying favorable terrain directions, operators can optimize antenna placement and height to maximize signals in those directions.
- Enhanced Communication: Knowing how terrain impacts signal, users can make informed decisions for DXing or contesting.
- Visualization of Terrain Effects: HFTA's graphical output makes it easy to see how antenna performance varies by landscape profile, helping users understand the often-invisible effects of terrain.

CONFIGURATION

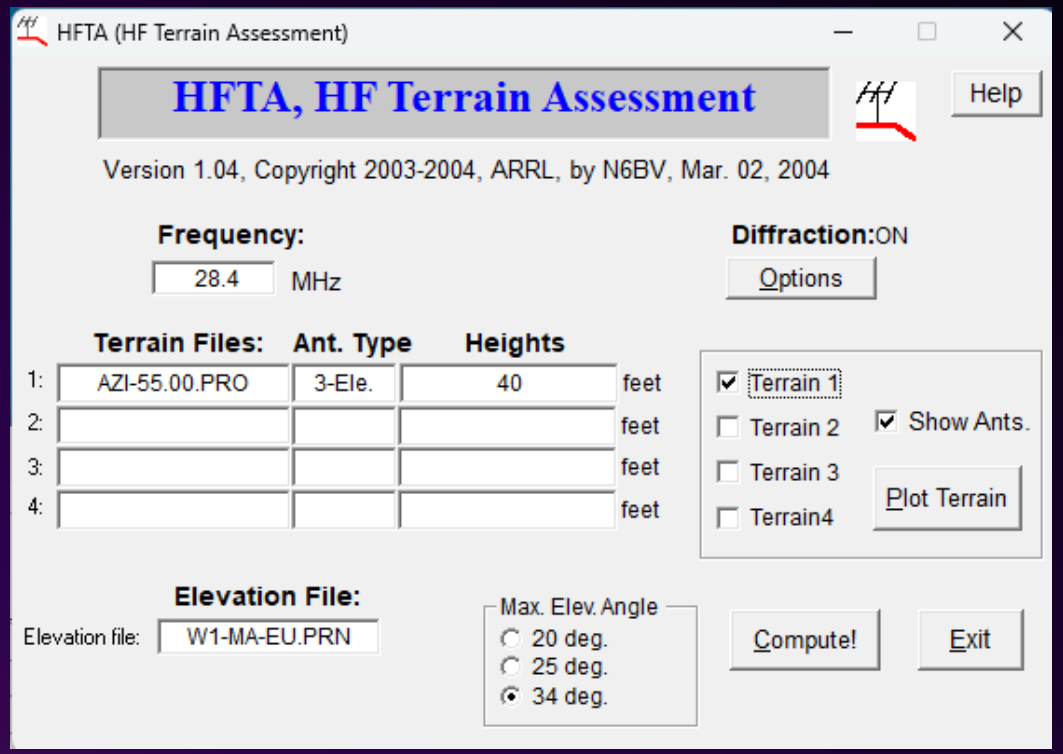
- Install the HFTA application
- Generate your Terrain Profile files
- Set your options
- Have some fun… run some models

GENERATE YOUR TERRAIN PROFILE FILES

1. Use Google Earth and record your Lat/Lon to 6-digit precision
2. https://paas.k6tu.net/ and click on the K6TU portal and create an account if you don't have one (free)
3. Click on New, select Terrain Profile, enter info, click Save *(pay attention to longitude; negative for WEST)*
4. Verify info, click Generate. Takes a few minutes
5. Refresh page, click on the link to retrieve your .zip file
6. You'll also receive an email with the link to the .zip file
7. Extract all the files into a directory that will be referenced later



HFTA PARAMETERS



- Enter a frequency of interest (2 - 30 MHz)
- Select terrain file for direction of interest
- Select antenna and define height
- Select elevation file for the same relative direction of interest

TERRAIN PROFILE TO EUROPE – WB1DX

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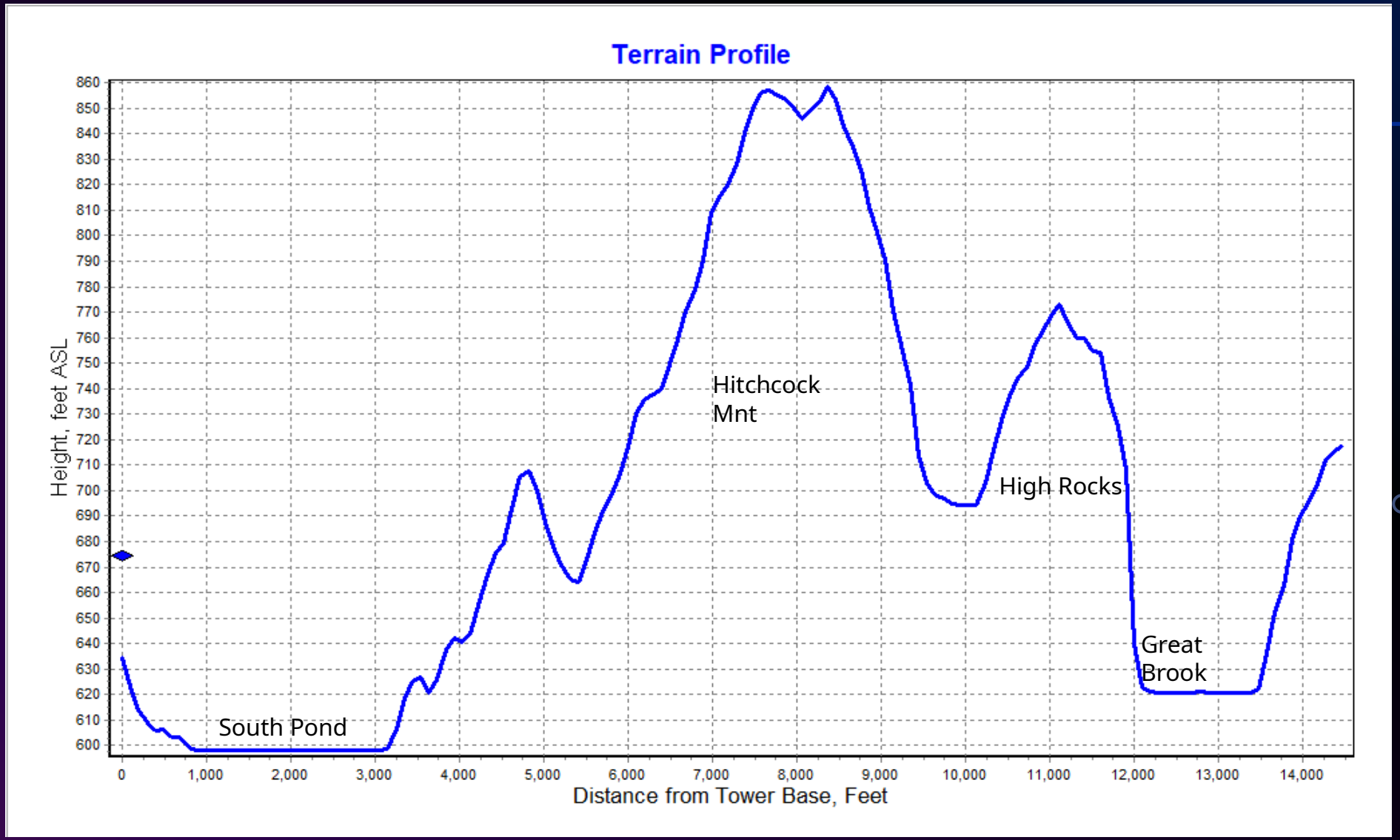
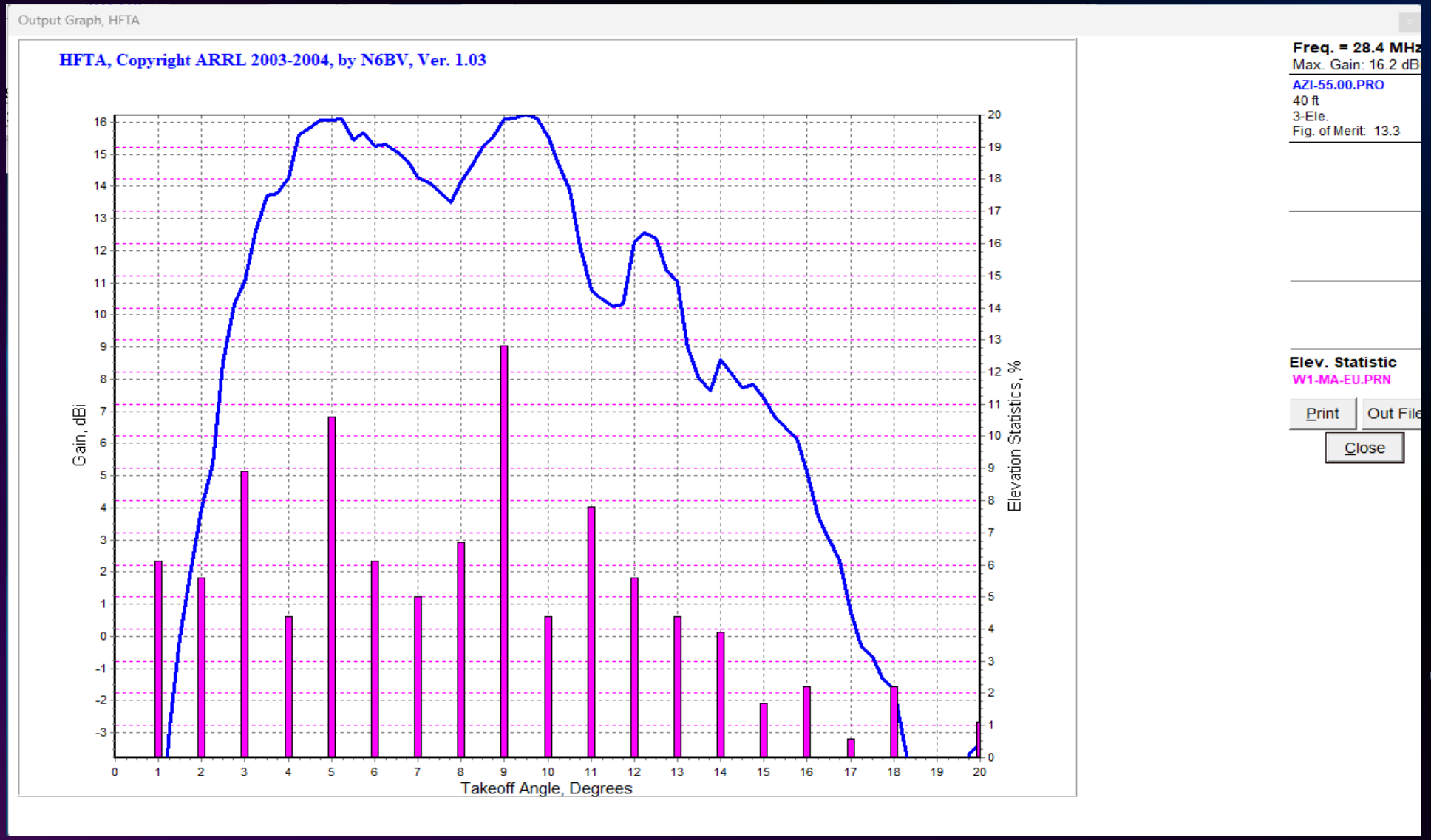
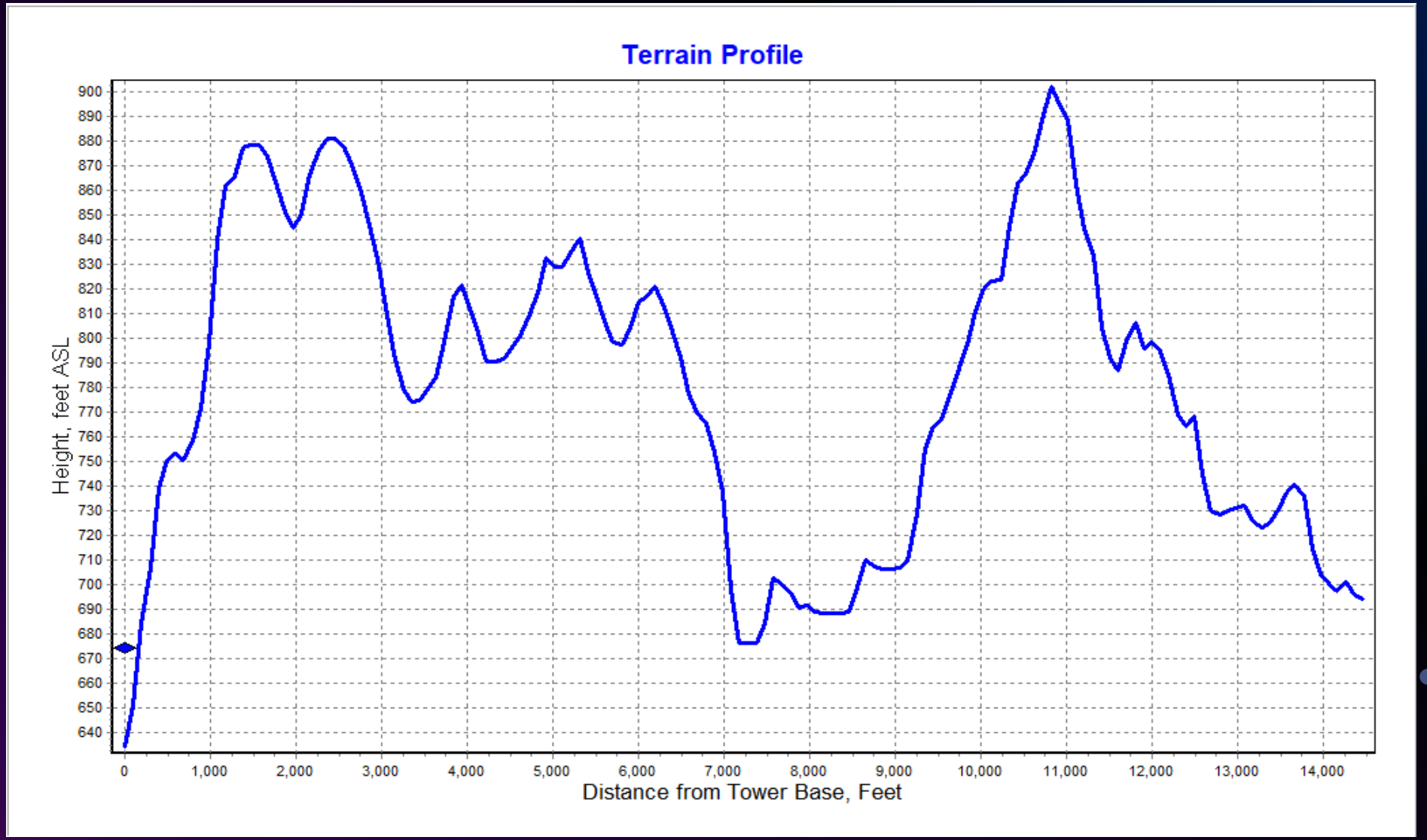


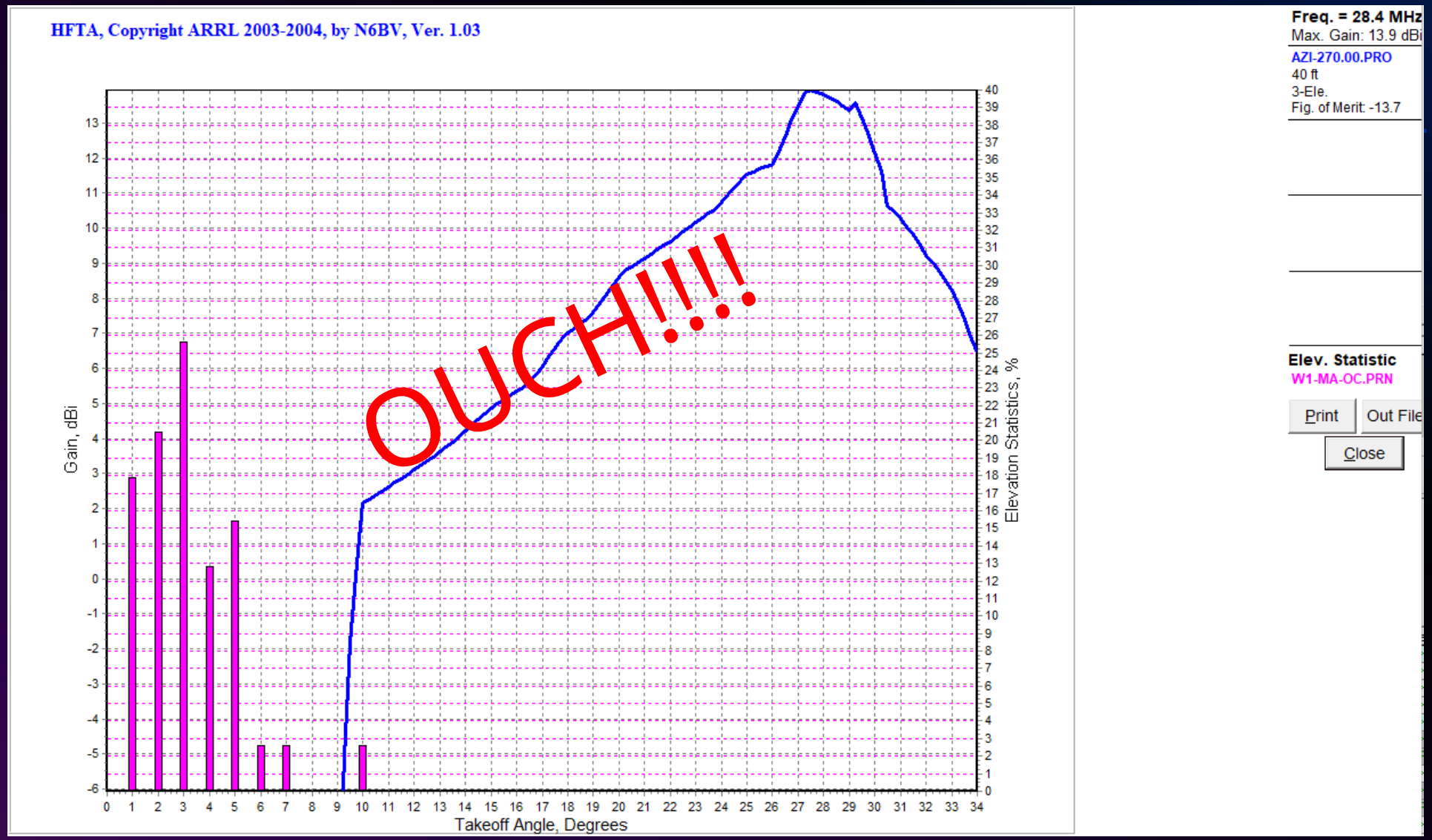
TERRAIN ASSESSMENT TO EUROPE – WB1DX



TERRAIN PROFILE TO OCEANA – WB1DX



TERRAIN ASSESSMENT TO OCEANA – WB1DX



DEMO

HCRA BATTLE OF THE TERRAINS

HCRA BATTLE OF THE TERRAINS

1. Meet the “Volunteers”
   - W1AST – Larry (Longmeadow)
   - N1TA – Mike (Westfield)
   - KX1X – John (South Hadley)
   - KK1W – Jim (Brimfield)
2. Same antennas – 3 el.
3. Same height – 30’
4. Same soil conditions
5. Analyze these bands
   - 10m
   - 15m
   - 20m
6. Focus on contest geographies
   - Europe – 55 degrees
   - South America – 170 degrees
   - Oceania – 270 degrees
   - Japan – 335 degrees

10 METER RESULTS

Station	Europe FoM	Pts.	South America FoM	Pts.	Oceana FoM	Pts.	Japan FoM	Pts.	Total
Larry - W1AST	10.8	4	11.2	4	11.5	4	9.5	3	15
Mike - N1TA	9.4	2.5	10.8	3	5.2	1	6.6	1	7.5
John - KX1X	9.4	2.5	9.9	2	7.7	2	7.2	2	8.5
Jim - KK1W	8.5	1	8.3	1	9.9	3	10.2	4	9

15 METER RESULTS

Station	Europe FoM	Pts.	South America FoM	Pts.	Oceana FoM	Pts.	Japan FoM	Pts.	Total
Larry - W1AST	9.9	4	9.4	3	10.9	4	8.2	3	14
Mike - N1TA	9	3	10	4	4.2	1	5.5	1	9
John - KX1X	8.3	2	8	2	5.5	2	6.7	2	8
Jim - KK1W	8	1	6.7	1	8.6	3	9.5	4	9

20 METER RESULTS

Station	Europe FoM	Pts.	South America FoM	Pts.	Oceana FoM	Pts.	Japan FoM	Pts.	Total
Larry - W1AST	8.3	4	7.2	3	7.5	3	8.5	3	13
Mike - N1TA	7.6	3	8.2	4	5	1	3.8	1	9
John - KX1X	7	2	6.9	2	5.3	2	4	2	8
Jim - KK1W	6.4	1	5.5	1	7.9	4	9.2	4	10

HCRA BATTLE OF THE TERRAINS
OVERALL RESULTS

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OVERALL RESULTS

Station	10 meters	15 meters	20 meters	Grand Total
Larry - W1AST	15	14	13	43
Jim - KK1W	9	9	10	28
Mike - N1TA	7.5	9	9	25.5
John - KX1X	8.5	8	8	24.5

THANK YOU

Ken Miller – WB1DX

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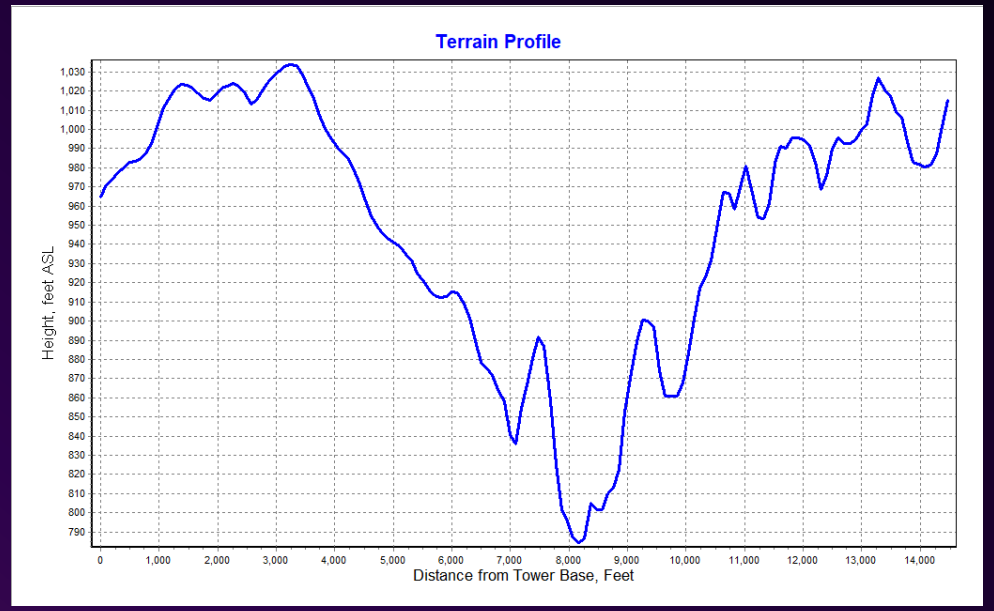
APPENDIX

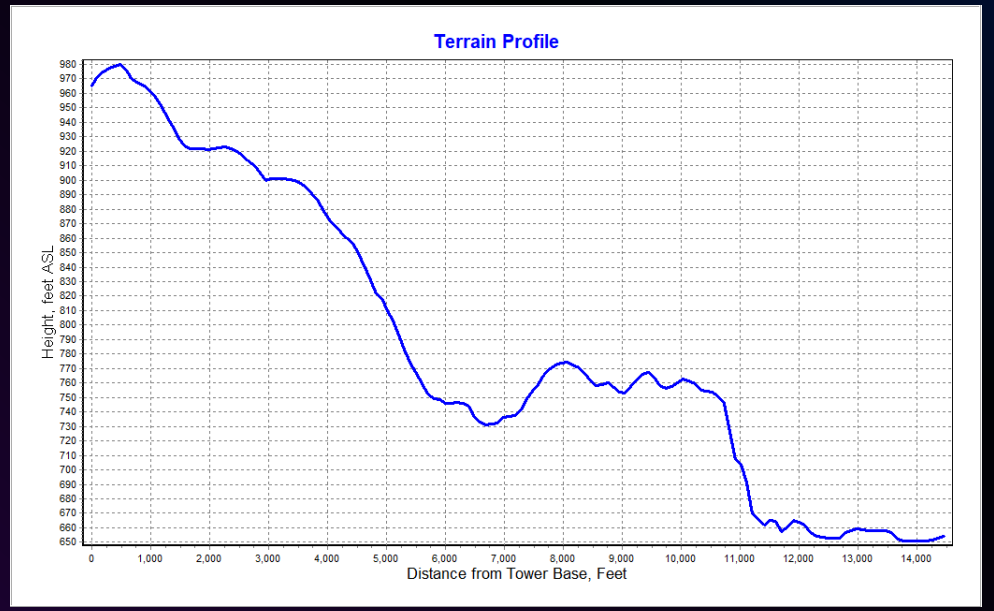
STATION TERRAIN PROFILES

KK1W TERRAIN PROFILES

Europe

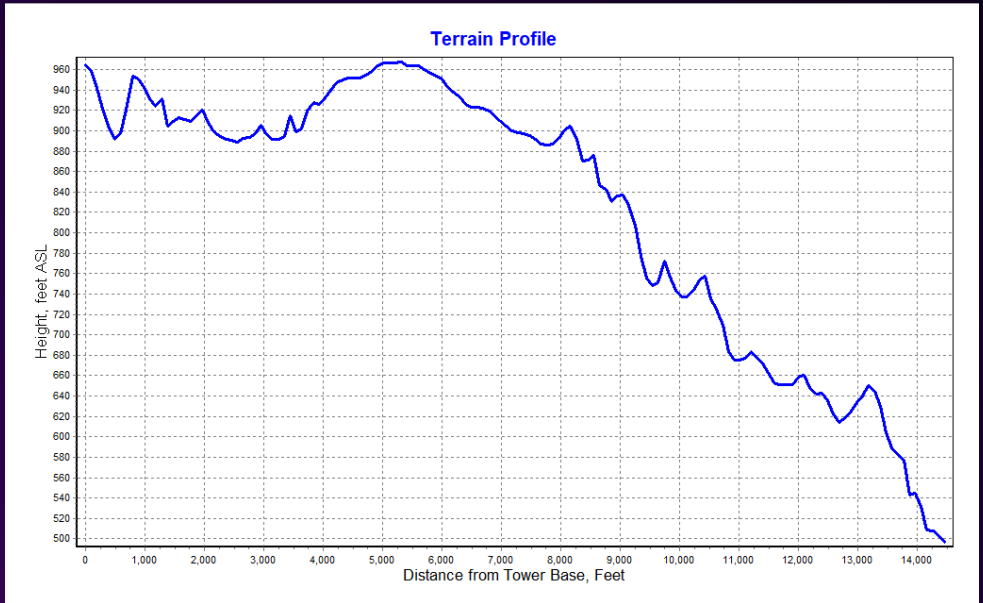


South America

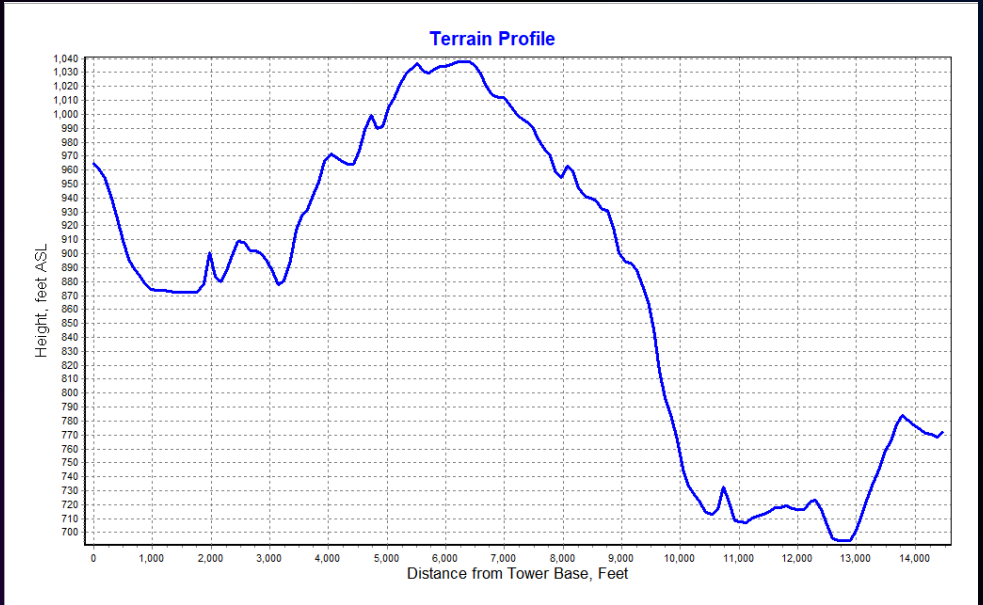


KK1W TERRAIN PROFILES

Oceana

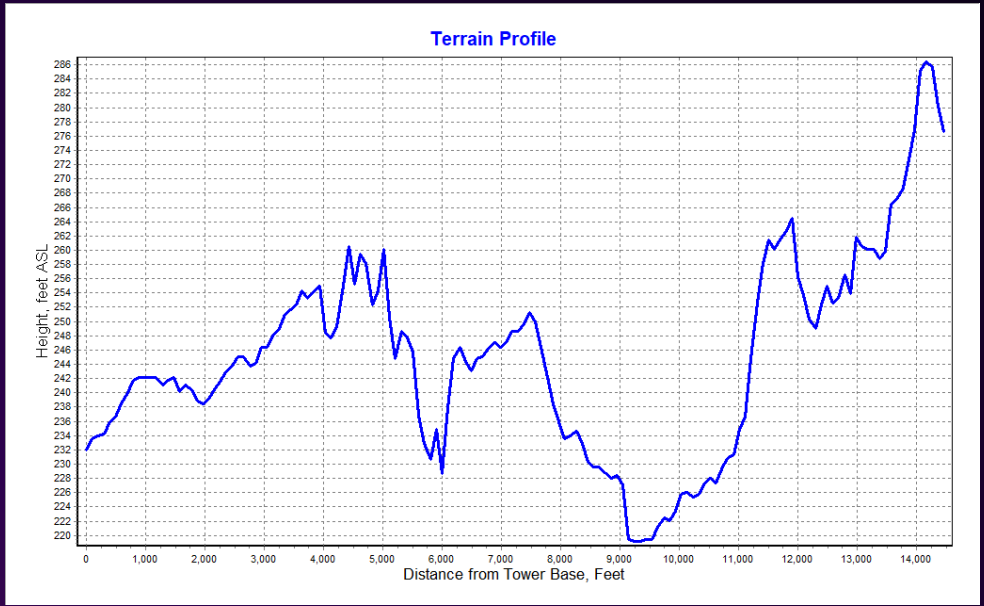


Japan

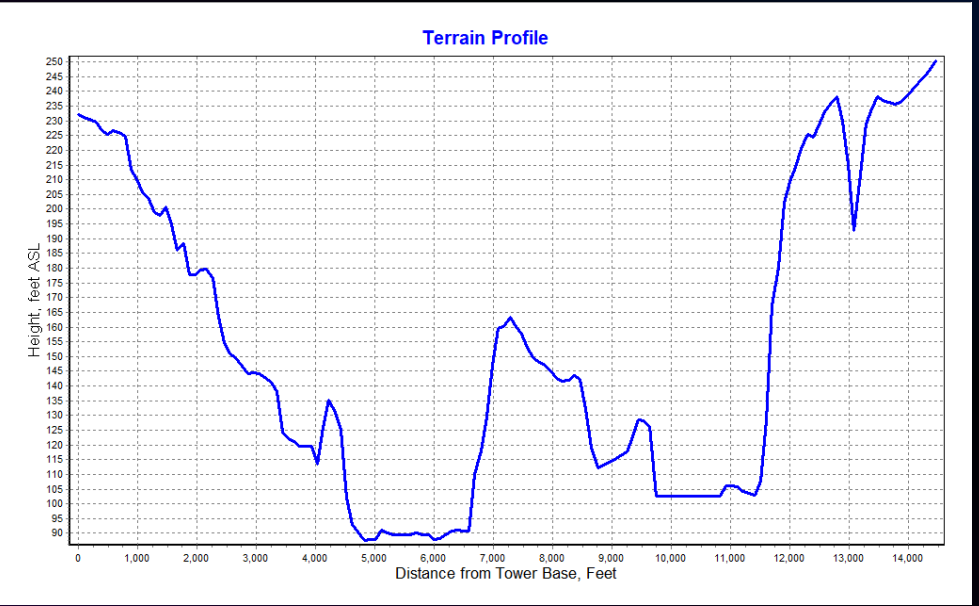


KX1X TERRAIN PROFILES

Europe



South America



KX1X TERRAIN PROFILES

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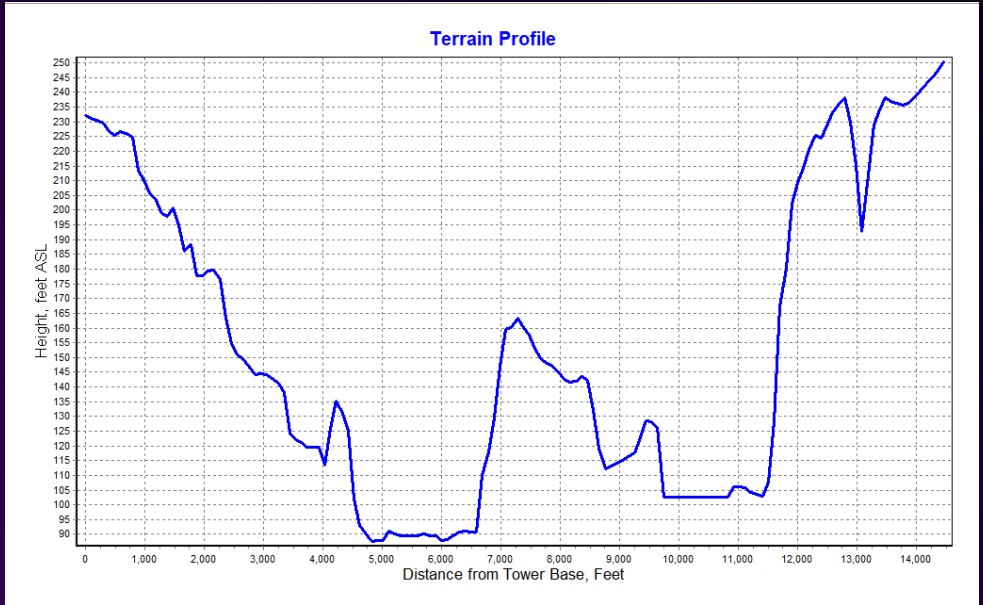
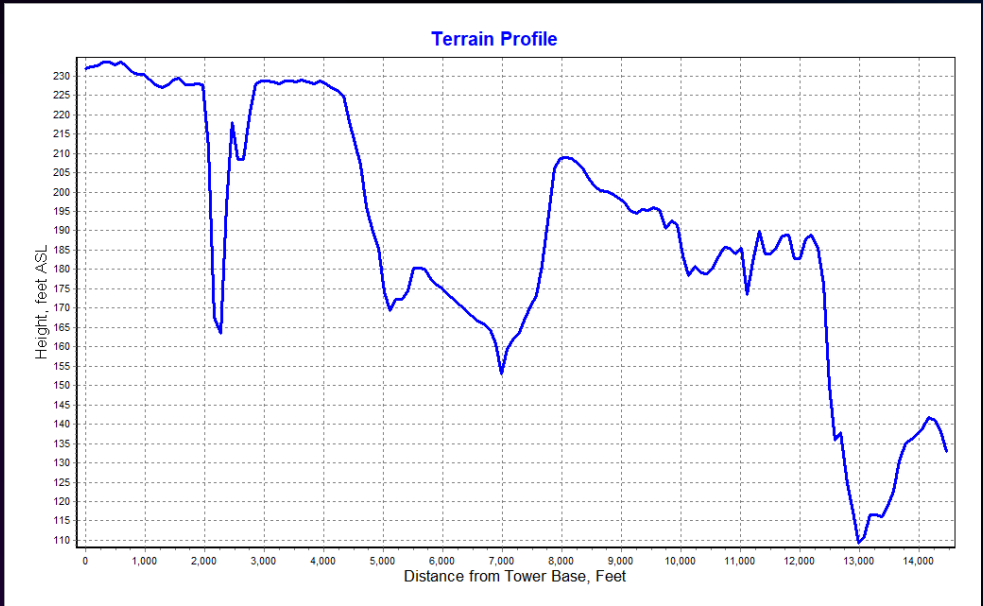
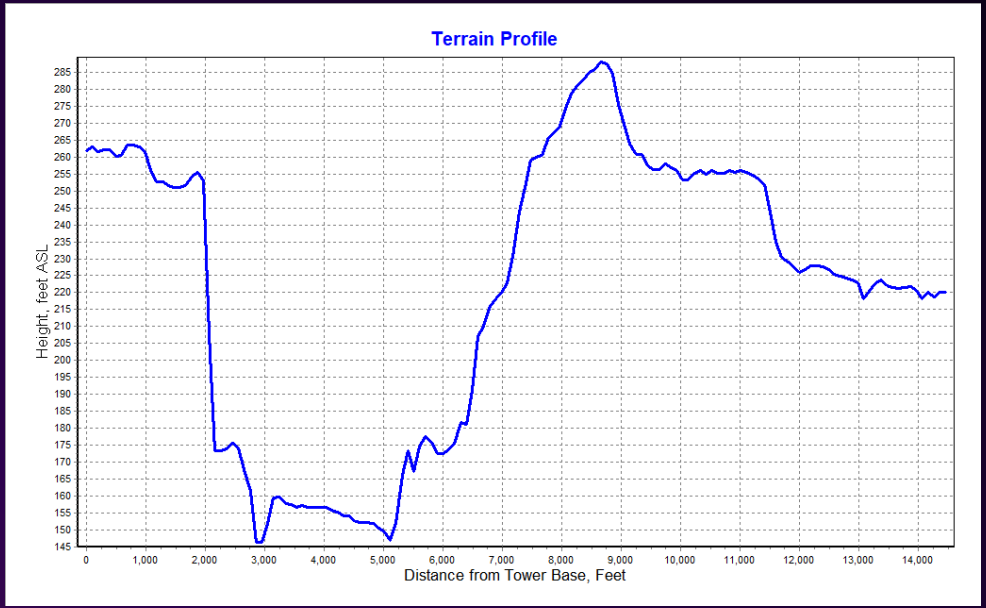


Japan

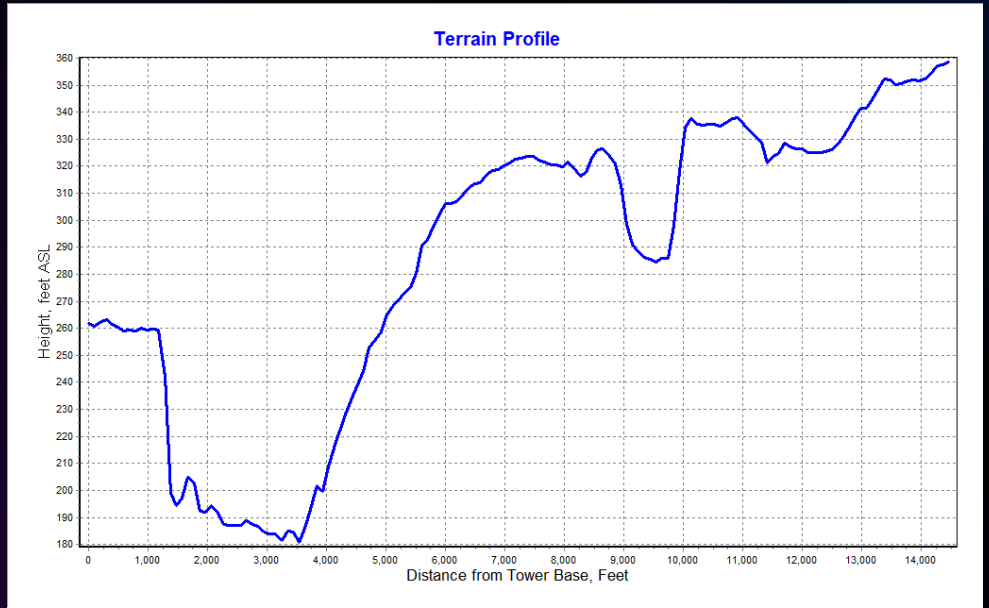


N1TA TERRAIN PROFILES

Europe

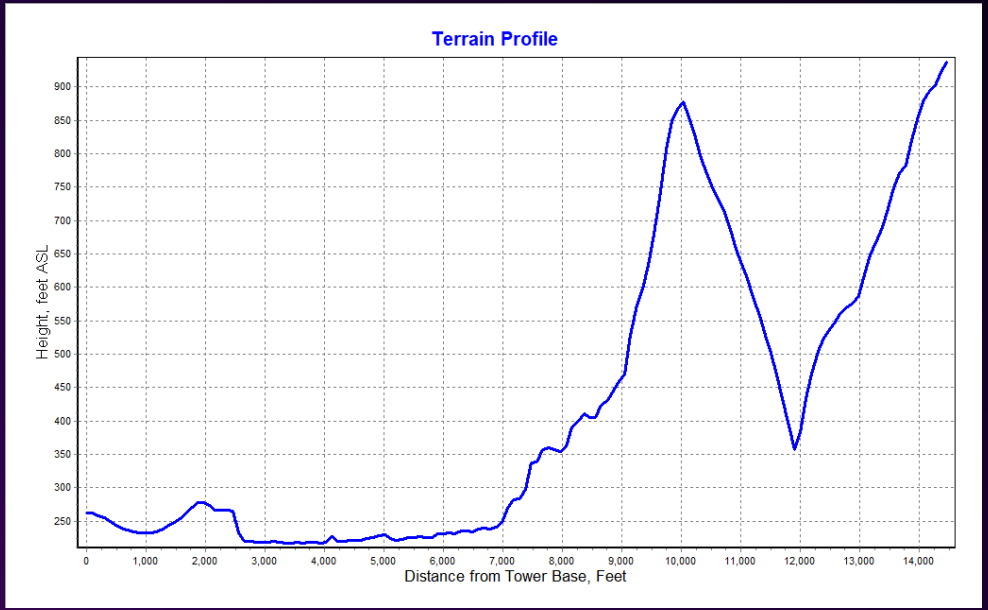


South America

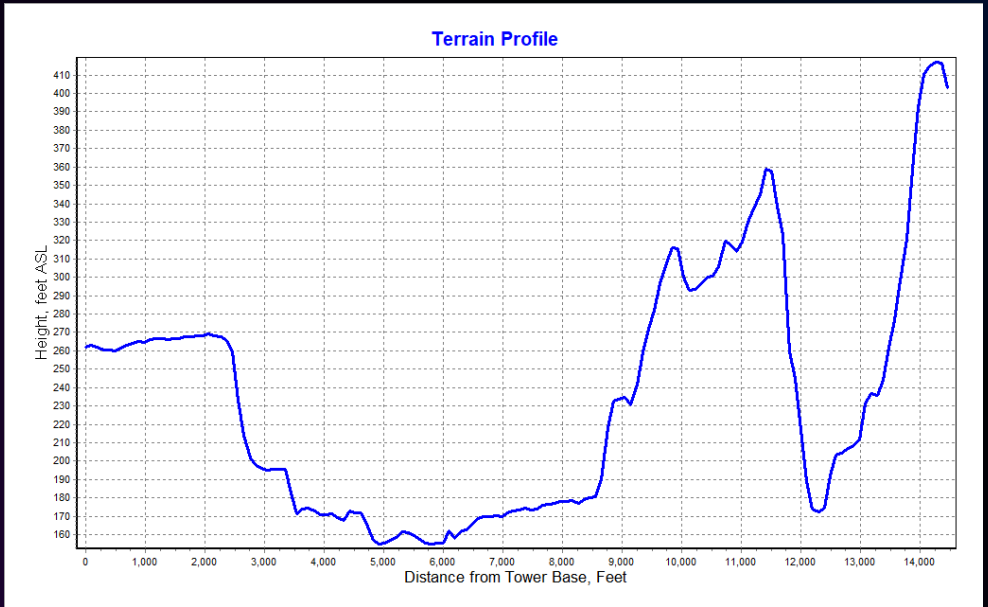


N1TA TERRAIN PROFILES

Oceana

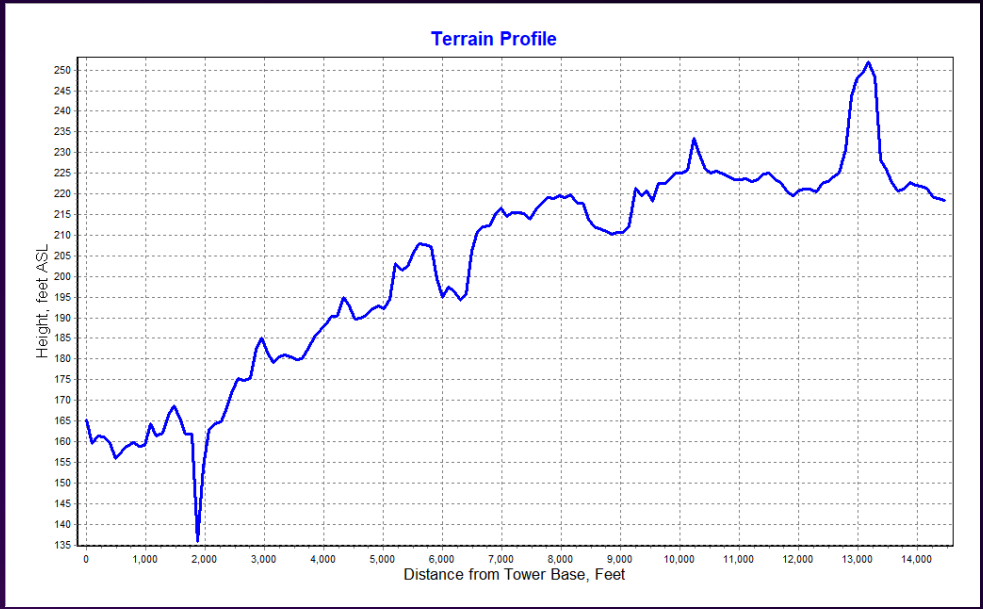


Japan

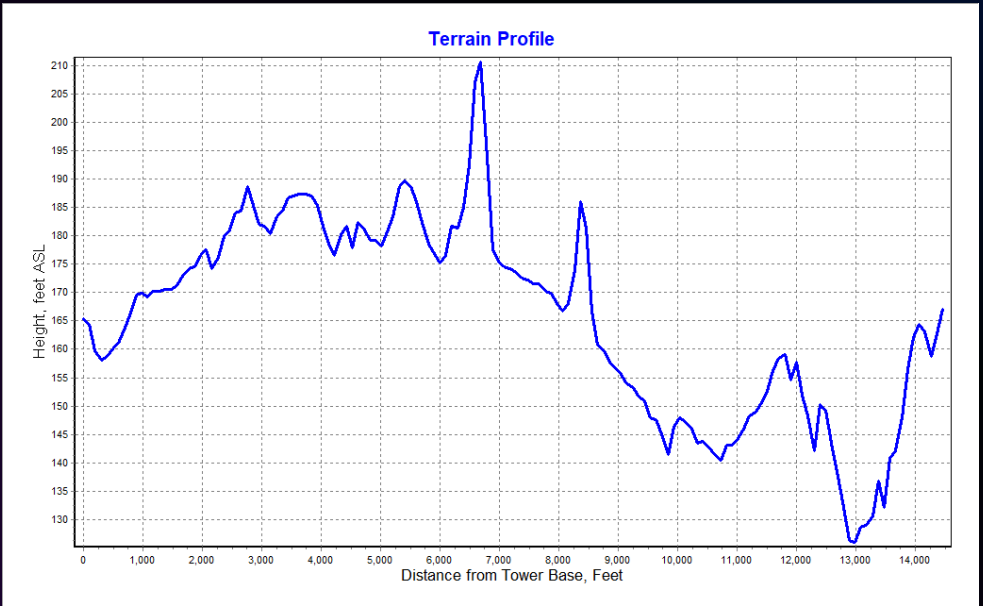


W1AST TERRAIN PROFILES

Europe



South America



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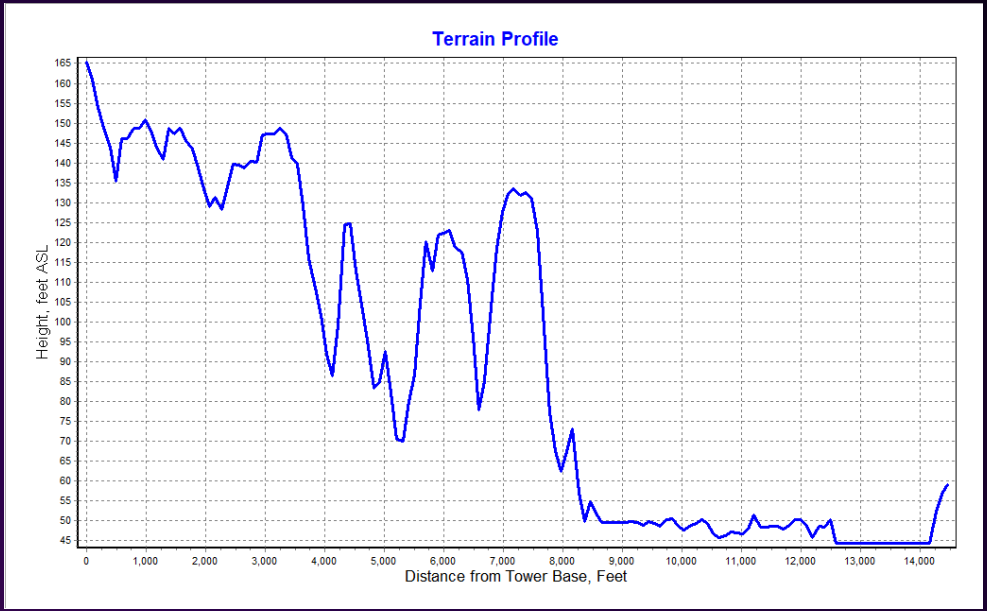
Oceana



Japan