1. Observations of distant objects and the spherical geometry of the Earth
   1. Obscured buildings and boat Chicago, Toronto, Wind turbines, IOM
   2. dddd
2. The derivation of the “Hidden” formula for determining the visibility of distant objects should be visible to an observer
   1. Spherical geometry, trig
   2. Hidden calculation on
3. Refraction, the mechanism and its effects on observations on the Earth
   1. Snell’s law, pencil
   2. Water demo
   3. Videos of lasers <https://youtu.be/5igI_UzwehY?t=1m55s>
   4. Glass layers demo and that you get looming as a default
   5. Show the pressure graph of atmosphere that demonstrates normal looming condition
   6. Show sun etc is loomed, and star
   7. Show Soundly’s demo of looming in action on the Marriot hotel and the contrast with non-looming
4. The 7/6 allowance for looming
   1. The Wikipedia page on refraction and 7/6
   2. ( Walter Bislin's page on the 7/6 and refraction allowance ) ????
   3. Andrew Young website on looming with his triangular object and 7/6
5. Visual effects other than looming caused by refraction
   1. Towering, show the photograph of Chicago
   2. Sinking
   3. Mirages, defined as being inverted
      1. Inferior with examples
      2. Superior with examples
6. Inversion layers
   1. The Canigou mountain, extreme inversion layer (Arrrghhhhhhhh doesn't this conflict with super looming conditions?)
   2. Show the wind turbine with the analysis of the layers
   3. Show the IOM with the same inversion layer
7. Explanation of inversion layers
   1. The temperature profiles causing a change in density which causes changes in refraction
   2. Phillip's graphs of temp profiles, pressure etc
   3. Possibly some graphs from "negligible" paper
   4. Show my composite of the various looming and inferior mirage temperature profiles which give different looming results
      1. show that a particular change of temperature causes no looming at all and light will travel in straight lines, but the adiabatic increase in atmosphere means that this is not possible, Andrew Young site.
8. Ray diagrams for the 35m position composite
   1. With and without the inversion????? Probably not
   2. Explain the looming
   3. Scaling non-linear
   4. Horizon position ( we need to add geometric horizon to Phillip's diagrams )
9. Image results for the 35m position composite
   1. Spherical Earth
      1. with and without refraction
      2. with and without inversion layer (? or do we just include this in the with refraction condition?)
      3. Overlay composite
   2. Flat Earth
      1. with and without refraction
      2. with and without inversion layer
      3. Overlay composite
10. Phillip's specialist subjects
    1. Colour of the inferior mirage
11. The Claims
12. Testing the model against the 27/10/17 observation of the IOM

To be done later

* 1. Globebusters thing at 1:20:00 or so with refraction model

# 7/5/18 presentation focussed on Riley's recent observations

1. Intro, describe the history of the situation
   1. History of the observation and argument
   2. Claims
   3. My predictions
   4. Observation and issues,
   5. objectives
   6. Teasers for the contents
2. The location
   1. maps etc
   2. photos of IOM
   3. Beach etc
3. Calculation using spherical geometry of what should be visible
   1. Show diagram
   2. Derive hidden value formula
4. Refraction affecting the results of spherical geometry
   1. Describe refraction and the bending of light with examples
      1. Snell's law
      2. Objects in glass
      3. Lasers in water
   2. Show glass demo as to what the standard refraction should be
   3. Show graph of atmosphere showing pressure and density shows the refractive index
5. So now having sorted out the observer height, what would we expect to see under the same conditions as his 27/10/17 observation
   1. Explain This is a little difficult because we effectively have to perform the perspective operation which means that some points will remain visible while others will not, Perhaps show what happens to a view at different heights., use some of the drone footage of Shawn or Soundly.
   2. Consider some sample points, given hidden versus actual
      1. Nose cone
      2. North Barrule
      3. The bulgy mountain to right of North Barrule.
   3. Try and summarise this result
   4. Draw a line through the old composite where the observer
      1. Use the Metabunk calculator to show that the various feature are not linearly changing with observer height and are lower than they should be e.g. nose cone
6. Sort out the observer height, credit Flat Earth maths
   * 1. The horizon is as close to the horizontal ( within 0.02 degrees, which is not even measureable to the resolution of the human eye, on a flat Earth this would 0 degrees ) so we can assume it is perfectly horizontal for this analysis
     2. Screen grabs of the later bits showing before and after rising up
     3. When Anthony stands up he adds five feet to the his height , we can see what that actual change of height equates to in angular terms to the image, use that as a measuring stick from the horizon to the water line and therefore the water line is 3m below Riley
7. Analysis of the composite
   1. Show composite
   2. Sample images
      1. The floaty land to the right and time stamps
      2. North Barrule on the left
      3. Bulge to the right of North Barrule
      4. Nose cone
   3. Identifying features including the land to the right with enhanced contrast etc
   4. Compare with the old composite?
   5. The prediction that there would be no inferior mirages
      1. What is an inferior mirage
         1. The wind turbines of Al K
         2. Heated day of distant hills
         3. Use the old IOM composite near the nose cone and near Shellag point, perhaps use the expanded images of those two from previous presentations, to demonstrate inferior mirage
         4. Show from research where inferior mirages appear, do they appear below horizon?
      2. So is there an inferior mirage in the images?
         1. Show two screen grabs of same bit at different times, showing animated nature of inferior mirages, they must be some water related feature or issue, such as waves
         2. No!
   6. Compression of the image
      1. What do I mean by compression?
         1. Vertical compression
         2. Perhaps doing a vertical compression of the nose cone or Shellag point,
         3. But this would also not be linear compression, the further down the greater the compression ( show the Toronto image )
8. Analysis of new composite
   1. Is this simply due to the change of observer height? Or is there something else going on?
      1. Are there any identifiable places, perhaps the two peaks of North Barrule would do it?
   2. Show compression of North Barrule, The Nose cone, other areas
9. Comparison of Riley's new video with old composite by overlaying
   1. Show the differences
   2. Scale the new one over the old one to show the comparison, but then it is not linear scaling
   3. Show specifically North Barrule and Nose cone and
10. Mention the other graphs are going to be mentioned at another date in another hangout
11. Mention that in the spring you wil get super looming and in the autumn the opposite will occur
12. Go through the individual rays for the inversion layer 27/10/17 version showing how inversion occurs by following two rays from same point on island and hitting observer at two different angles
13. Show how the rays create the horizon position relative to the geometric position.
14. In the images, show the angles it gives and compare against the standard refracted values, this should show if the size of the images are different to the standard refracted expected and the position relative to the eye line
15. Compare Phillip's image with the composite
16. Show the amount missing in the metabunk calculator
17. Flat stuff!
18. Position of the horizon! Does it move? See images with new horizon, the hoirzon could actually be the other side of the island! And in fact it is. The horizon is determined by the curvature of the ray and if that ray was of the radius of the Earth one could have the ability to look at one's bottom.
19. Show the difference between refraction and no refraction, overlay the two images to show how much looming is going on in refraction case. This is the ultimate demonstration I have wanted to make for months. Now it can be done! How different is the apparent and actual position of the IOM!!!!!!!!!!!!! Flat Earthers who have exaggerated the looming effect and claimed that the IOM was being loomed up hugely can now see the visual results of looming.
20. Highlight vanishing zone in ray diagrams with inferior mirages
21. Show how much difference refraction makes with 7/6 and with and show scale diagram from Douglas to St.Bees
22. Show the bending of the light in ray tracing diagram!!!!!!!!!!! Compare with straight line
23. Show superior mirage temperature profile
24. Show that one cannot just rely on standard curve calculators for everythin because the atmosphere is si such a dynamic thing, show some wacky mirage images
25. Examples of mirages a demonstration of light not travelling in straight lines and being bent in all sorts of directions and the bending is not negligible
26. Show how the ray diagram causing more looming with lower angle as per Young's paper http://iopscience.iop.org/article/10.1086/420806/pdf
27. Need to show how the 7/6 cannot possibly account for the ray diagram because it is not a circle
28. Mention we probably cannot see the base of the Maughold lighthouse but it is in fact the inversion of the top, credit to Miles Davies for initially suggesting it. But I dismissed this because I didn't appreciate compression.
29. Mention that using the ray tracing there is a 10% compression of the lower parts of the image to the next portion of the image, I have measured this. Also the compression of the sun, e.g. Al K's sunset picture and the effect cited in the wikipedia page on atmospheric refraction which mentions the refraction at 0.05 degrees is less than that at the horizon, hence compression of sun vertically
30. Note lack of sun reflection in sunset image in Canigou and the Al K image, caused by looming of course
31. Get Phillip to do Sun refraction
32. The ray tracer to keep linearity means that the rays are all at are different to key
33. Compression of the inversion layer in the ray trace Fermi function
34. Show bulge in geometry as Riley seems to think this is a new issue, also mention about the issue of angular resolution he brought up because he thinks the viewing operation is somehow part of the geometry
35. include in the section on geometry with refraction a test on using it on the Maughold lighthouse and introduce rule with angles to test the hidden value against what is seen. Use the vertical ruler and show using the spherical geometry
36. We need to do more comparisons of the refracted model against the ray trace model to verify the validity of using the refracted Earth calculator and whether invalidating that is equaivalent to invalidating the spherical model. Compare int the case of Maughold Lighthouse and the North Barrulle and Snaefell and Shellag point
37. Add in the Maughol dlitghhouse onthe refarction hidden plot
38. Mention that what one sees a tree a few hundred yards away is actually refracted up by a few inches, confirmed by George's experiment
39. The missing height claims of Anthony Riley missing 700 feet or something, presumably Shellag Point
40. Recent super looming Ranty observations caused by heat wave
41. Mention the conditions which lead to maximum refraction, calm conditions, warm air over moving over cold water, because water doesn't warm up as quickly because of convection
42. Include more on compression, relevant to Ranty's footage, video on the 27/6 he includes a summary in the evening video but the original footage of the boat at two different heights in the earlier video.
43. There are two components 1) The gradient determines the vertical translation of the image relative to the eye line 2) The non-linearity of the gradient determines the change of shape e.g. compression of the image.
44. Inferior mirgaes and Sly's video and Phillips image of close observer to an inferior mirage and position of geometric horizon, quiz question 2
45. C:\Users\root\Documents\Young\_2004\_AJ\_127\_3622.pdf
46. Compare the rays for looming and super looming. Overlay them or just a few rays as I did with the different rays
47. Another quiz question, show the refracted and unrefracted images of the IOM.
48. If ANY ray to the observer has a smaller radius than the Earth then the observer can see all around the Earth
49. Discuss why the ray tracer method gives better resutls than the standard, and how much better it is for things like the lighthouse
50. Physics of convection, no looming would require a lapse rate which is not supported by adiabatic expansion see the Young site
51. Do the temp profile related to the above point on the physics for
    1. No looming
    2. Circulating rays around the world, no horizon
    3. Do a plot of radius of curvature ratio versus dt/dh
    4. show example of different radii
    5. show how 7/6 is calculated
52. Vanishing zone, inversion layer obscuring things behind it and moving horizon down
53. the analysis of location 2
    1. extra compression with lower height
    2. no horizon
    3. there is a height for which light will go around the Earth
54. <show the path of refracted ray in comparison with unrefracted on Doulgas to St. Bees scale diagram>
55. Mention it is impossible to have compression and an inferior mirage
56. To read list
    1. the Young wesbite on calculating circular rays
    2. the webpage on common formulas
    3. lapse rate comments? The standard atmosphere is 6.6, the dry is 9, and the moist is something else, what is going on?
    4. http://gfzpublic.gfz-potsdam.de/pubman/item/escidoc:236880:1/component/escidoc:236879/11292.pdf

Interesting clips from Ntahan's hangotus etc

1. https://www.youtube.com/watch?v=htM2vUCZHwU Nathan claims in last 5 minutes we can't model inferior mirages etc etc etc
2. Phuket's word video "refraction on an imaginary curve" or similar which shows the inferior mirageig and bending of a road which he likens to the Sundly ponchtatrain videos
3. Ranty shows video https://www.youtube.com/watch?v=MDHFk1frJcY of Barrow in furness that does not include superior miraging
4. Use the values for temp and pressre on the location1 and use the effective radius froim that to get a new position of the lighthouse and plot the image for that

# Refraction plan

1. Observations, does light travel in straight lines
   1. Large scale effects
      1. Picture of mirages etc
   2. Small scale effects
      1. Experiment to show atmospheric geodetic refraction using simultaneous measurement exists ( and also includes correction I think)
2. Refraction
   1. Different mediums
      1. Household experiment
      2. Snell's law
   2. Same mediums
      1. Lab Experiment establishes atmospheric phenomenon????
3. Atmospheric refraction
   1. Civil engineer website correction for refraction including curvature
   2. lab experiments showing air can refract dependent on pressure,
      1. C:\Users\root\Documents\Young\_2004\_AJ\_127\_3622.pdf
      2. C:\Users\root\Documents\what determines refractive index of air.pdf = https://pdfs.semanticscholar.org/ee25/a6fee957533194bb2f06b3832cf418dfd5f6.pdf
      3. C:\Users\root\Downloads\schellekens1986.pdf

phenomenon

Script

This hangout will have a lot of intellectual, text, verbal and visual content so you will need to concentrate and have your thinking caps on. For flat Earthers, there will be some pretty pic-­tures for you to look at. This document will hopefully be available as a webpage for you to per-­use at your leisure.

1. Compression of inversion layer image
2. Show the angle of refraction to scale to demonstrate the small nature and compare to

curvature of Earth and 7/6

1. Show the 7/6 theory from Andrew Young, Walter Bislin
2. Get relief map of the IOM I think the Met site did it, perhaps also the “whats that place” I have a link to in my main presentation document
3. Dealing with Riley’s latest claims on the 21/4/18
   1. Show the geomteric problem
   2. show the refraction problem
      1. Lied about me meeting the claim, and it varied about whether he thinks I agreed about giving conditions or the time,
   3. Grab images of his video to compare against model
   4. Grab sound from me making the predictions on Saturday
      1. Compression
      2. No inferior mirage
   5. Draw a diagram of two machines, one that can get meteorological info and one which generates pictures. How would you use that to do what he asked? Multiple conditions may match the
   6. The information he provided
      1. “I can see the floaty land”
      2. The date 21/4/10
      3. His errors about his observer height, how can someone be this stupid?
4. Temperature variation of sea by about a degree using the tables and other compromises we had to make because we don’t have some of the data for the evening
5. Note that the 35m of 21710/17 composite lines up pretty well with my composite of the 2m observation on the 21/4/18. Better than I had hoped.
6. Show Riley’s latest video showing it is animated
7. Show how the new composite compares with the old
8. Show map of buoys
9. Riley problems
   1. Observer height is 3m as demonstrated by Flat Earth maths and my estimation and what I stated on Dirdiat
   2. Didn’t take multiple sacans
   3. didn’t stop
   4. Didn’t take a picture
10. Drivel about scintillation
11. and not visible for the given observer parameters ( explain the spherical geometry and refraction and also what is standard refraction which is used in the calculators )
12. at 1:10 he pauses and you can see the animation of the mirage, also at 1:37, 1:47, there are some breaking waves
13. Ensure that the conditions for inferior mirage is for light bending down and superior is light bending up
14. Show the portion of the IOM in the video on the OS map
15. https://www.youtube.com/watch?v=IxQwjuZLdnE&list=PLrhg8yp9bA8ZyQAmggpXfJ1lFG3mnmg5d&index=41&t=3999s Nathan saying ball on roundabout would not curve from perspective of person at the centre of the roundabout.

In case of air

a

¼

28

:

79

10

5

and

b

¼

5

:

67

10

5

.

**Images requested on the 31/5/18 for the IOM presentation for two locations with different heights from St. Bees for flat and spherical Earth models, for rendered images of the IOM and the ray diagrams**

So for the images I would like full res please broken up into the 8 sections or whatever.

1. Location 54.487375° -3.599760° at 35m above sea level at the time ( 33.5 above mean sea level, although that takes into account tide, perhaps it would be better to reduce the height of the sea by 1.5m, then there would be a correction for the destination too which I don't think we have been doing so far)
   1. Spherical, No refraction, so temperature profile is just dry lapse rate
      1. Ray traces
      2. Image
   2. Spherical, Refraction with the double fermi thingy temp profile at the bottom, giving refractive inversion layer
      1. Ray traces (may use the one I have with lovely two rays joining)
      2. Image
   3. Flat, No refraction, so temp profile is just dry lapse rate
      1. Ray traces
      2. Image
   4. Flat, Refraction with the double fermi thingy temp profile at the bottom, giving refractive inversion layer
      1. Ray traces
      2. Image
2. Location 54.490729 -3.608613° at 3m above sea level at the time ( I can't remember the tide, it might have been close to mean sea level) with the 8.1 temp profile
   1. Spherical, No refraction, so temp profile is just dry lapse rate
      1. Ray traces
      2. Image
   2. Spherical, Refraction with super looming 8.1 temp profile at the bottom
      1. Ray traces (may use the one I have)
      2. Image
   3. THIS MAY NOT BE NECESSARY, ONLY DO IF TIME Flat, No refraction, so temp profile is just dry lapse rate
      1. Ray traces
      2. Image
   4. Flat, Refraction with super looming temp profile at the bottom
      1. Ray traces
      2. Image

51293

[13:24:21 | Edited 13:25:51] therumpus: Wellllllllllllllll....................... I would like

1) Sharper graduation for the colours for height and darkening for distance

2) 35m from the location on the hills

a) no refraction

b) inversion layer

3) 3m from the location for Riley on his belly

a) no refraction

b) super refraction

[13:24:27] therumpus: I am sure there is more somehow

[13:24:42] therumpus: And giving me images all broken up is fine

[13:25:22] Phillip Weinberg: OK

[13:26:02] therumpus: Sorry I got 3b wrong

[13:26:40] therumpus: and of course the headings are different AS WELL AS LOCATION

[13:26:53] therumpus: remember to use the two different locations

[13:27:01] therumpus: Oh gawd!!!!!

[13:27:08] therumpus: There are more!

[13:27:16] therumpus: 4) Flat versions!!!!!!!!!!!!

[13:27:38] therumpus: a) with refraction

b) Refraction and inversion layer for the old image

[13:27:54] therumpus: c) with super looming in the newer image

[13:28:09] therumpus: I had a list of these somewhere