



# TOWARD A NEW THEORY OF EARTH CRUSTAL DISPLACEMENT

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MARK CARLOTTO

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SOCIETY  
FOR  
SCIENTIFIC  
EXPLORATION

1  
00:00:08,390 --> 00:00:05,570

good afternoon and

2  
00:00:10,910 --> 00:00:08,400

um welcome to uh this month's SSE

3  
00:00:13,669 --> 00:00:10,920

Community discussion hour my name is

4  
00:00:15,470 --> 00:00:13,679

Mark Robin Lorraine I'm the secretary of

5  
00:00:17,930 --> 00:00:15,480

the society for scientific exploration

6  
00:00:19,910 --> 00:00:17,940

and I'm pleased to be the host for this

7  
00:00:23,090 --> 00:00:19,920

afternoon session uh featuring Mark

8  
00:00:25,730 --> 00:00:23,100

collado who is excuse me aerospace

9  
00:00:27,410 --> 00:00:25,740

engineer with 40 years of experience in

10  
00:00:28,970 --> 00:00:27,420

satellite imaging and related

11  
00:00:31,070 --> 00:00:28,980

applications

12  
00:00:33,290 --> 00:00:31,080

Mark received his PhD in electrical

13  
00:00:35,510 --> 00:00:33,300

engineering from Carnegie Mellon in 1981

14

00:00:38,209 --> 00:00:35,520

and has written over a hundred technical

15

00:00:40,490 --> 00:00:38,219

papers and eight books outside of his

16

00:00:42,530 --> 00:00:40,500

occupation his journey as an independent

17

00:00:45,290 --> 00:00:42,540

scientist has taken him to Mars and back

18

00:00:47,389 --> 00:00:45,300

again Dr carlotto's first book The

19

00:00:49,670 --> 00:00:47,399

Martian enigmas describes a 10 year old

20

00:00:52,970 --> 00:00:49,680

investigation of the face and other

21

00:00:55,670 --> 00:00:52,980

unusual objects on Mars using shape from

22

00:00:57,889 --> 00:00:55,680

shading and other techniques to analyze

23

00:01:01,610 --> 00:00:57,899

the 3D structure of the face

24

00:01:03,529 --> 00:01:01,620

a second book the codonia controversy

25

00:01:05,929 --> 00:01:03,539

steps back from the science of the Mars

26  
00:01:07,969 --> 00:01:05,939  
investigation and examines it within the

27  
00:01:10,190 --> 00:01:07,979  
context of the centuries-old search for

28  
00:01:11,570 --> 00:01:10,200  
life beyond Earth and its possible

29  
00:01:13,310 --> 00:01:11,580  
implications

30  
00:01:15,410 --> 00:01:13,320  
his involvement in space related

31  
00:01:18,469 --> 00:01:15,420  
investigations continues to the present

32  
00:01:21,289 --> 00:01:18,479  
and is described in not of this world an

33  
00:01:22,969 --> 00:01:21,299  
emerging picture of the UFO phenomenon

34  
00:01:24,710 --> 00:01:22,979  
Dr collado's presentation today

35  
00:01:27,350 --> 00:01:24,720  
describes work related to his recent

36  
00:01:29,570 --> 00:01:27,360  
book before Atlantis in which he applies

37  
00:01:31,850 --> 00:01:29,580  
Charles half Good's theory of Earth

38  
00:01:34,249 --> 00:01:31,860

crustal displacement to the

39

00:01:36,590 --> 00:01:34,259

interpretation of agent sites whose gen

40

00:01:39,109 --> 00:01:36,600

metrical and astronomical alignments are

41

00:01:42,770 --> 00:01:39,119

not currently well understood

42

00:01:44,749 --> 00:01:42,780

is a blog a website before atlantis.com

43

00:01:47,469 --> 00:01:44,759

is frequently updated with his latest

44

00:01:50,030 --> 00:01:47,479

research and I believe this also was a

45

00:01:51,289 --> 00:01:50,040

topic of a recent article that you

46

00:01:55,370 --> 00:01:51,299

published in the Journal of scientific

47

00:01:57,590 --> 00:01:55,380

exploration so without a do um uh Mark's

48

00:01:59,030 --> 00:01:57,600

talk is pre-recorded we'll play the

49

00:02:02,030 --> 00:01:59,040

recording which will last a little over

50

00:02:04,249 --> 00:02:02,040

half an hour and after the recording

51  
00:02:06,590 --> 00:02:04,259  
um Mark will be back and I will be

52  
00:02:09,650 --> 00:02:06,600  
hosting the Q a session so as the

53  
00:02:11,750 --> 00:02:09,660  
recording is going use the Q a uh button

54  
00:02:13,309 --> 00:02:11,760  
that shows in the right hand side of

55  
00:02:15,830 --> 00:02:13,319  
your screen to type in any questions

56  
00:02:17,809 --> 00:02:15,840  
that you have during the presentation

57  
00:02:20,150 --> 00:02:17,819  
and we'll take them at the end

58  
00:02:32,270 --> 00:02:20,160  
right thank you very much and we'll

59  
00:02:35,930 --> 00:02:33,890  
hello everybody

60  
00:02:37,790 --> 00:02:35,940  
um I'd like to give a presentation on a

61  
00:02:39,530 --> 00:02:37,800  
paper that was published uh this past

62  
00:02:43,009 --> 00:02:39,540  
spring

63  
00:02:45,050 --> 00:02:43,019

um on a new uh theory of Earth crystal

64

00:02:48,650 --> 00:02:45,060

displacement

65

00:02:50,229 --> 00:02:48,660

um it's uh actually an old idea

66

00:02:54,170 --> 00:02:50,239

um

67

00:02:57,949 --> 00:02:54,180

that in many ways goes back uh to the

68

00:02:59,449 --> 00:02:57,959

early uh 20th century to wegner's work

69

00:03:02,210 --> 00:02:59,459

in um

70

00:03:04,009 --> 00:03:02,220

in developing a theory of of continental

71

00:03:06,050 --> 00:03:04,019

drift which later became known as plate

72

00:03:10,610 --> 00:03:06,060

tectonic theory

73

00:03:13,729 --> 00:03:10,620

um his his theory uh took many years to

74

00:03:15,050 --> 00:03:13,739

be uh verified actually wasn't until the

75

00:03:15,710 --> 00:03:15,060

1960s

76

00:03:18,949 --> 00:03:15,720

um

77

00:03:23,630 --> 00:03:18,959

but in the meantime others had suggested

78

00:03:27,649 --> 00:03:23,640

that besides uh continental drift plate

79

00:03:29,350 --> 00:03:27,659

tectonics there are other uh uh other

80

00:03:31,850 --> 00:03:29,360

phenomenon at work

81

00:03:34,670 --> 00:03:31,860

malankovic had proposed

82

00:03:38,449 --> 00:03:34,680

um the idea that there were changes

83

00:03:40,309 --> 00:03:38,459

taking place in the actual overall

84

00:03:43,850 --> 00:03:40,319

um movement of the crust which would

85

00:03:45,470 --> 00:03:43,860

result in changes in pole locations and

86

00:03:48,289 --> 00:03:45,480

he believed that this worked together

87

00:03:50,949 --> 00:03:48,299

with plate tectonics to maintain the

88

00:03:52,789 --> 00:03:50,959

Earth in a state of equilibrium

89

00:03:55,610 --> 00:03:52,799

and actually

90

00:03:59,330 --> 00:03:55,620

um you know we all uh or those that are

91

00:04:01,490 --> 00:03:59,340

familiar with uh Charles Hopkins work uh

92

00:04:05,030 --> 00:04:01,500

his book The Earth shifting Crest Crest

93

00:04:07,670 --> 00:04:05,040

published in 58. if you realize that a

94

00:04:11,210 --> 00:04:07,680

few years before that uh Morris Ewing

95

00:04:14,270 --> 00:04:11,220

and William Don who were involved

96

00:04:17,629 --> 00:04:14,280

actually in some of the early work in

97

00:04:19,069 --> 00:04:17,639

proving wegner's Theory uh seafloor

98

00:04:22,790 --> 00:04:19,079

spreading

99

00:04:24,770 --> 00:04:22,800

um and um and other evidence that you

100

00:04:26,870 --> 00:04:24,780

know took a number of years to to be

101  
00:04:28,790 --> 00:04:26,880  
developed um they actually proposed the

102  
00:04:32,629 --> 00:04:28,800  
theory of Ice Age is very similar to

103  
00:04:34,430 --> 00:04:32,639  
have Good's Theory uh in 58. so rather

104  
00:04:36,170 --> 00:04:34,440  
than get uh

105  
00:04:38,390 --> 00:04:36,180  
bogged out in a lot of the history and

106  
00:04:40,249 --> 00:04:38,400  
that's the Ellipsis there is to say

107  
00:04:41,810 --> 00:04:40,259  
there's there's been a lot of criticism

108  
00:04:43,490 --> 00:04:41,820  
of hapgood's theory and I'm not going to

109  
00:04:45,230 --> 00:04:43,500  
get into that here what I like to do is

110  
00:04:48,170 --> 00:04:45,240  
present sort of the new version of this

111  
00:04:50,090 --> 00:04:48,180  
and uh I think maybe it would be a good

112  
00:04:51,590 --> 00:04:50,100  
uh after the talk we could probably talk

113  
00:04:54,290 --> 00:04:51,600

about some of the issues some of the

114

00:04:56,930 --> 00:04:54,300

so-called problems with it and uh how

115

00:04:59,210 --> 00:04:56,940

this new uh Theory these some new ideas

116

00:05:02,270 --> 00:04:59,220

that I proposed in the spring

117

00:05:04,570 --> 00:05:02,280

um may solve some of those problems

118

00:05:10,790 --> 00:05:08,090

theory is that basically boils down to

119

00:05:12,170 --> 00:05:10,800

over the last hundred thousand years he

120

00:05:14,870 --> 00:05:12,180

proposed through our three previous

121

00:05:17,150 --> 00:05:14,880

locations of the North Pole uh shown

122

00:05:20,450 --> 00:05:17,160

here see if the pointer works there we

123

00:05:24,050 --> 00:05:20,460

go uh previous location was Hudson Bay

124

00:05:27,230 --> 00:05:24,060

uh preceded by a location

125

00:05:28,550 --> 00:05:27,240

um near Norway in the Norwegian sea and

126

00:05:30,590 --> 00:05:28,560

then prior to that in the Yukon

127

00:05:34,490 --> 00:05:30,600

territory of Canada

128

00:05:36,590 --> 00:05:34,500

and his um hypothesis was based on uh

129

00:05:39,230 --> 00:05:36,600

climate data that seemed to indicate

130

00:05:43,969 --> 00:05:39,240

there was a correlation between uh

131

00:05:46,490 --> 00:05:43,979

glaciers and Ice Age events and um and

132

00:05:47,930 --> 00:05:46,500

and different at different times and he

133

00:05:49,969 --> 00:05:47,940

believed that these were correlated with

134

00:05:52,610 --> 00:05:49,979

shifts in the in the polls so rather

135

00:05:55,670 --> 00:05:52,620

than uh the current theory which is that

136

00:05:57,710 --> 00:05:55,680

there are Global changes in temperature

137

00:06:01,909 --> 00:05:57,720

um and other factors that cause is ages

138

00:06:08,810 --> 00:06:05,870

so hapka's desire to

139

00:06:10,670 --> 00:06:08,820

uh or his interest uh in the subject was

140

00:06:13,249 --> 00:06:10,680

really motivated by

141

00:06:16,730 --> 00:06:13,259

um his interest and his curiosity about

142

00:06:19,370 --> 00:06:16,740

climate change uh mine was a little

143

00:06:22,129 --> 00:06:19,380

different uh back a number of years ago

144

00:06:24,890 --> 00:06:22,139

I was planning a trip and you know we're

145

00:06:27,290 --> 00:06:24,900

all familiar here this is a an overhead

146

00:06:28,969 --> 00:06:27,300

image of the Giza Pyramids and we're all

147

00:06:30,590 --> 00:06:28,979

familiar with their alignment to the

148

00:06:32,629 --> 00:06:30,600

cardinal directions very accurately

149

00:06:35,330 --> 00:06:32,639

aligned in fact

150

00:06:36,650 --> 00:06:35,340

uh but I was going to Mexico and I

151

00:06:39,469 --> 00:06:36,660

noticed a lot of the structures in

152

00:06:43,969 --> 00:06:39,479

Mexico are not currently aligned and I

153

00:06:48,890 --> 00:06:46,129

um

154

00:06:51,590 --> 00:06:48,900

in doing a little bit of research uh it

155

00:06:54,650 --> 00:06:51,600

appeared that others had noticed that

156

00:06:57,350 --> 00:06:54,660

there was a correlation in for example

157

00:06:59,270 --> 00:06:57,360

the direction of teotawa Khan in North

158

00:07:02,210 --> 00:06:59,280

Mexico City

159

00:07:04,249 --> 00:07:02,220

and one of halfgood's polls in fact it

160

00:07:05,450 --> 00:07:04,259

was very closely aligned to one of his

161

00:07:08,629 --> 00:07:05,460

polls

162

00:07:11,029 --> 00:07:08,639

so here's um here's Taylor Khan here's

163

00:07:13,430 --> 00:07:11,039

the Meridian going through the Avenue of

164

00:07:15,230 --> 00:07:13,440

the Dead uh here's other meridians from

165

00:07:18,230 --> 00:07:15,240

other sites

166

00:07:21,529 --> 00:07:18,240

um here's Hopkins poll shown here

167

00:07:24,469 --> 00:07:21,539

in the with the H and um these other

168

00:07:27,589 --> 00:07:24,479

sites and this is uh something I'll go

169

00:07:29,570 --> 00:07:27,599

into in a bit uh using site alignments I

170

00:07:32,330 --> 00:07:29,580

was actually able to refine hapgut's

171

00:07:34,730 --> 00:07:32,340

poll and and and adjust it find a

172

00:07:36,409 --> 00:07:34,740

location that was pretty close uh and it

173

00:07:39,409 --> 00:07:36,419

turned out with by making these

174

00:07:42,290 --> 00:07:39,419

adjustments uh sites like teotawa Khan

175

00:07:45,249 --> 00:07:42,300

now appear to be aligned to to previous

176

00:07:48,050 --> 00:07:45,259

locations of the poll

177

00:07:51,350 --> 00:07:48,060

so I you know I wrote this up and I

178

00:07:53,210 --> 00:07:51,360

submitted it to uh the journal and uh I

179

00:07:55,129 --> 00:07:53,220

was all excited and they said you know

180

00:07:57,589 --> 00:07:55,139

wait a second you need to sort of

181

00:07:58,730 --> 00:07:57,599

approach this more systematically uh and

182

00:08:02,029 --> 00:07:58,740

I'm you know

183

00:08:04,730 --> 00:08:02,039

um it's so happy the peer review process

184

00:08:07,010 --> 00:08:04,740

is such a great process because

185

00:08:08,570 --> 00:08:07,020

they said you know basically you need to

186

00:08:11,930 --> 00:08:08,580

sort of take it a step at a time first

187

00:08:13,850 --> 00:08:11,940

show that there's an anomaly and then in

188

00:08:16,490 --> 00:08:13,860

within the context of that present your

189

00:08:19,249 --> 00:08:16,500

theory as as a solution

190

00:08:22,670 --> 00:08:19,259

um to it so the first step was to show

191

00:08:23,749 --> 00:08:22,680

that in analyzing sites uh across the

192

00:08:25,749 --> 00:08:23,759

world

193

00:08:28,790 --> 00:08:25,759

um archaeological sites

194

00:08:31,249 --> 00:08:28,800

uh looking at their alignment

195

00:08:33,469 --> 00:08:31,259

um you know I initially thought yeah

196

00:08:35,209 --> 00:08:33,479

probably most sites are aligned and

197

00:08:37,730 --> 00:08:35,219

known directions and there's only a few

198

00:08:40,130 --> 00:08:37,740

that sort of deviate

199

00:08:41,750 --> 00:08:40,140

um and you know if you look at some well

200

00:08:44,269 --> 00:08:41,760

here's some example sites for example

201  
00:08:46,610 --> 00:08:44,279  
anchor wat is aligned to the cardinal

202  
00:08:49,790 --> 00:08:46,620  
directions like the Giza Pyramids uh

203  
00:08:52,790 --> 00:08:49,800  
Karnak is aligned to the solstices uh

204  
00:08:56,150 --> 00:08:52,800  
the ziggurat of ER in um

205  
00:08:58,190 --> 00:08:56,160  
in Mesopotamia is aligned to lunar

206  
00:09:01,610 --> 00:08:58,200  
standstills

207  
00:09:04,550 --> 00:09:01,620  
um and uh co-care in uh Cambodia I think

208  
00:09:07,070 --> 00:09:04,560  
it is is aligned to Zenith passage uh

209  
00:09:07,790 --> 00:09:07,080  
Sunrise directions

210  
00:09:10,370 --> 00:09:07,800  
um

211  
00:09:14,870 --> 00:09:10,380  
it turned out if I looked at about 200

212  
00:09:17,389 --> 00:09:14,880  
224 sites and most had explanations but

213  
00:09:18,710 --> 00:09:17,399

there was a significant number uh more

214

00:09:21,650 --> 00:09:18,720

than a third actually about 40 percent

215

00:09:23,389 --> 00:09:21,660

that had no conventional explanation so

216

00:09:26,030 --> 00:09:23,399

none of these explanations here we're

217

00:09:27,850 --> 00:09:26,040

looking at uh and also considered

218

00:09:30,290 --> 00:09:27,860

Stellar alignments

219

00:09:33,590 --> 00:09:30,300

alignments to other sites other

220

00:09:36,350 --> 00:09:33,600

geographical references

221

00:09:39,590 --> 00:09:36,360

um and so forth but uh about about 40

222

00:09:44,870 --> 00:09:42,230

so the second paper which was published

223

00:09:47,230 --> 00:09:44,880

uh this was in 2020 uh the second paper

224

00:09:49,790 --> 00:09:47,240

uh the first was published in the spring

225

00:09:52,190 --> 00:09:49,800

which identified and did the study

226

00:09:54,550 --> 00:09:52,200

identify this possible anomaly the

227

00:09:57,110 --> 00:09:54,560

second paper published in the summer

228

00:10:00,590 --> 00:09:57,120

presented this new model which I call a

229

00:10:02,449 --> 00:10:00,600

shifted pole alignment model which is

230

00:10:04,190 --> 00:10:02,459

um the idea that rather than reference

231

00:10:06,490 --> 00:10:04,200

everything to the current poll perhaps

232

00:10:09,410 --> 00:10:06,500

the Ancients uh had referenced

233

00:10:12,949 --> 00:10:09,420

alignments sites to uh previous

234

00:10:16,130 --> 00:10:12,959

locations of the North Pole so in other

235

00:10:17,810 --> 00:10:16,140

words different uh North was had been in

236

00:10:20,690 --> 00:10:17,820

different directions

237

00:10:22,490 --> 00:10:20,700

and um you know showing some of the

238

00:10:25,790 --> 00:10:22,500

sites here on the left these are

239

00:10:29,030 --> 00:10:25,800

meridians from sites uh that I had

240

00:10:31,490 --> 00:10:29,040

identified and uh correlated with four

241

00:10:33,110 --> 00:10:31,500

previous locations of the poll uh one in

242

00:10:35,210 --> 00:10:33,120

Hudson Bay near half Goods original

243

00:10:37,790 --> 00:10:35,220

location

244

00:10:40,130 --> 00:10:37,800

um uh two others in Greenland and Norway

245

00:10:43,610 --> 00:10:40,140

which kind of split his uh second pole

246

00:10:46,069 --> 00:10:43,620

and then the other poll I moved from

247

00:10:48,710 --> 00:10:46,079

UConn to the Bering Sea and again this

248

00:10:51,889 --> 00:10:48,720

these refined alignments uh were based

249

00:10:54,050 --> 00:10:51,899

on uh or these refined locations were

250

00:10:56,090 --> 00:10:54,060

based on looking at site alignments and

251  
00:10:58,009 --> 00:10:56,100  
correlating them basically intersecting

252  
00:11:00,230 --> 00:10:58,019  
these these these great circles that you

253  
00:11:02,329 --> 00:11:00,240  
see here doing this spherical

254  
00:11:04,130 --> 00:11:02,339  
trigonometry and figuring out where they

255  
00:11:06,650 --> 00:11:04,140  
where they intersect it

256  
00:11:10,069 --> 00:11:06,660  
so that was the second paper

257  
00:11:11,389 --> 00:11:10,079  
um and then um oh let me just also

258  
00:11:13,850 --> 00:11:11,399  
mention the fact that we're not just

259  
00:11:16,790 --> 00:11:13,860  
talking about Cardinal alignments uh you

260  
00:11:19,069 --> 00:11:16,800  
know I had noticed um you know here uh

261  
00:11:20,750 --> 00:11:19,079  
or we we noticed that uh you know now

262  
00:11:23,389 --> 00:11:20,760  
not all the sites aligned to the current

263  
00:11:24,949 --> 00:11:23,399

pole are aligned cardinally but a lot of

264

00:11:29,569 --> 00:11:24,959

them are aligned to this to the sun and

265

00:11:32,210 --> 00:11:29,579

the moon so you know similarly uh

266

00:11:34,130 --> 00:11:32,220

uh with the polls we're in a different

267

00:11:36,829 --> 00:11:34,140

location and the Ancients followed

268

00:11:39,530 --> 00:11:36,839

similar practices you can imagine that

269

00:11:42,110 --> 00:11:39,540

they aligned you know way back when they

270

00:11:45,170 --> 00:11:42,120

aligned sites to the Moon and Sun but

271

00:11:46,370 --> 00:11:45,180

the solstice and uh lunar standstill

272

00:11:47,810 --> 00:11:46,380

directions were different because they

273

00:11:50,990 --> 00:11:47,820

were referenced to a different poll

274

00:11:52,730 --> 00:11:51,000

location so you know working out all the

275

00:11:55,190 --> 00:11:52,740

math and it's uh this is all described

276

00:11:57,170 --> 00:11:55,200

in these papers uh explains how this is

277

00:11:59,810 --> 00:11:57,180

done you come up with these alignment

278

00:12:02,030 --> 00:11:59,820

diagrams and um you know basically it

279

00:12:04,370 --> 00:12:02,040

allows you to determine you know where

280

00:12:08,750 --> 00:12:04,380

these directions were uh during previous

281

00:12:11,750 --> 00:12:08,760

uh in previous eras where the North Pole

282

00:12:13,670 --> 00:12:11,760

was in you know different hypothesized

283

00:12:17,590 --> 00:12:13,680

locations of course none of this is

284

00:12:19,490 --> 00:12:17,600

prudent it's all uh it's all hypothesis

285

00:12:22,069 --> 00:12:19,500

so

286

00:12:24,069 --> 00:12:22,079

um with all that as as a bit of a

287

00:12:27,050 --> 00:12:24,079

preliminary uh

288

00:12:29,449 --> 00:12:27,060

discussion let me talk just go through

289

00:12:31,910 --> 00:12:29,459

the outline of the paper

290

00:12:34,130 --> 00:12:31,920

um I'm going to talk about global sea

291

00:12:36,710 --> 00:12:34,140

level malankovic cycles and linear

292

00:12:39,230 --> 00:12:36,720

prediction this is sort of this this I

293

00:12:42,470 --> 00:12:39,240

think uh sort of is the essence for what

294

00:12:44,569 --> 00:12:42,480

the problem in climate models are and I

295

00:12:46,910 --> 00:12:44,579

think where pole shifts fit in pole

296

00:12:49,910 --> 00:12:46,920

shifts being uh what I show here is

297

00:12:52,069 --> 00:12:49,920

possibly being The Missing Link

298

00:12:53,210 --> 00:12:52,079

um I then talk briefly about correlated

299

00:12:55,250 --> 00:12:53,220

events

300

00:12:58,670 --> 00:12:55,260

um Earth changes

301

00:13:01,310 --> 00:12:58,680

um uh that have uh taken place that

302

00:13:03,410 --> 00:13:01,320

could suggest a possible mechanism uh

303

00:13:06,230 --> 00:13:03,420

haggood proposed that it was a buildup

304

00:13:08,750 --> 00:13:06,240

of ice that caused crustal displacements

305

00:13:10,509 --> 00:13:08,760

and Einstein and the forward to

306

00:13:14,090 --> 00:13:10,519

halfgood's book actually

307

00:13:16,009 --> 00:13:14,100

uh he uh was uh the opinion that it

308

00:13:19,009 --> 00:13:16,019

wasn't of sufficient Mass

309

00:13:24,050 --> 00:13:19,019

um and in this paper uh talk about here

310

00:13:28,790 --> 00:13:24,060

uh uh we did a little analysis using uh

311

00:13:32,030 --> 00:13:28,800

crustal uh models and Ice models to show

312

00:13:34,250 --> 00:13:32,040

um you know basically how uh ice would

313

00:13:36,949 --> 00:13:34,260

have affected the Earth's moments of

314

00:13:39,230 --> 00:13:36,959

inertia and so I come up here with what

315

00:13:40,970 --> 00:13:39,240

I call half good 2.0 which is a a

316

00:13:44,269 --> 00:13:40,980

refined version of the hapko's theory

317

00:13:46,129 --> 00:13:44,279

which is based on actually proposing a

318

00:13:47,329 --> 00:13:46,139

completely different mechanism and

319

00:13:48,710 --> 00:13:47,339

that's really the I think the

320

00:13:51,470 --> 00:13:48,720

contribution of the paper and I'll

321

00:13:55,250 --> 00:13:51,480

present some preliminary findings uh and

322

00:13:58,250 --> 00:13:55,260

summarize at the end so let me press on

323

00:14:01,009 --> 00:13:58,260

uh you know melancholic Cycles are these

324

00:14:01,790 --> 00:14:01,019

Cycles where incident

325

00:14:04,129 --> 00:14:01,800

um

326

00:14:08,389 --> 00:14:04,139

uh solar radiation varies as a function

327

00:14:11,210 --> 00:14:08,399

of Earth's obliquity uh it's procession

328

00:14:13,430 --> 00:14:11,220

um the uh change in Earth's orbit uh

329

00:14:14,690 --> 00:14:13,440

around the Sun and other factors and

330

00:14:16,490 --> 00:14:14,700

there's been an attempt to try to

331

00:14:20,449 --> 00:14:16,500

correlate these with

332

00:14:22,850 --> 00:14:20,459

with measurements of uh of ice or sea

333

00:14:25,129 --> 00:14:22,860

level as sea level is really inversely

334

00:14:27,829 --> 00:14:25,139

related to the amount of ice uh

335

00:14:30,230 --> 00:14:27,839

temperature uh atmospheric oxygen and

336

00:14:33,949 --> 00:14:30,240

other things

337

00:14:35,389 --> 00:14:33,959

so you know the basic idea right now in

338

00:14:36,350 --> 00:14:35,399

climate science is that the motion of

339

00:14:39,290 --> 00:14:36,360

the Sun

340

00:14:41,810 --> 00:14:39,300

Moon and Earth uh have something to do

341

00:14:44,750 --> 00:14:41,820

with the defining these melancholic

342

00:14:47,689 --> 00:14:44,760

cycles that modulate the amount of solar

343

00:14:49,730 --> 00:14:47,699

radiation incident solar radiation and

344

00:14:51,949 --> 00:14:49,740

then this results in changes in global

345

00:14:54,650 --> 00:14:51,959

uh temperature sea level and polarize so

346

00:14:56,930 --> 00:14:54,660

that's the the current theory

347

00:15:00,470 --> 00:14:56,940

so Global sea level is sort of the key

348

00:15:04,189 --> 00:15:00,480

proxy the um as sea levels drop

349

00:15:06,230 --> 00:15:04,199

polarized increases and vice versa

350

00:15:11,689 --> 00:15:06,240

um and this is sea level data over the

351

00:15:11,699 --> 00:15:14,569

now

352

00:15:17,829 --> 00:15:15,350

um

353

00:15:21,170 --> 00:15:17,839

looking at sea level and other

354

00:15:23,509 --> 00:15:21,180

parameters Global parameters uh and I I

355

00:15:25,009 --> 00:15:23,519

won't go through all of them but uh sort

356

00:15:27,110 --> 00:15:25,019

of hitting on the key one here which is

357

00:15:30,350 --> 00:15:27,120

insulation because this is what you know

358

00:15:32,810 --> 00:15:30,360

comes from uh malankovic's Theory you

359

00:15:35,030 --> 00:15:32,820

notice that there seems to be some

360

00:15:38,210 --> 00:15:35,040

correlation there I mean in general

361

00:15:39,410 --> 00:15:38,220

though uh I mean insulation does appear

362

00:15:40,069 --> 00:15:39,420

to lead

363

00:15:42,949 --> 00:15:40,079

um

364

00:15:44,629 --> 00:15:42,959

uh sea level changes

365

00:15:46,490 --> 00:15:44,639

um and in some cases they're they're

366

00:15:48,170 --> 00:15:46,500

they line right up in other cases they

367

00:15:50,210 --> 00:15:48,180

don't in some cases there's a

368

00:15:51,949 --> 00:15:50,220

correlation in other cases uh there's no

369

00:15:53,389 --> 00:15:51,959

correlation at all

370

00:15:55,129 --> 00:15:53,399

um but there's something there's

371

00:15:57,230 --> 00:15:55,139

something going on there some some

372

00:15:59,629 --> 00:15:57,240

degree of correlation

373

00:16:02,090 --> 00:15:59,639

so I thought well uh being an electrical

374

00:16:04,970 --> 00:16:02,100

engineer I'm not a geologist or a

375

00:16:07,370 --> 00:16:04,980

climate scientist let me look uh look at

376

00:16:09,949 --> 00:16:07,380

the changes in sea level which turn out

377

00:16:12,829 --> 00:16:09,959

to be highly correlated

378

00:16:17,090 --> 00:16:12,839

um with insulation and construct a

379

00:16:18,949 --> 00:16:17,100

linear predictor which is uh here which

380

00:16:21,230 --> 00:16:18,959

is uh basically estimating sea level

381

00:16:24,110 --> 00:16:21,240

changes a function of insulation

382

00:16:26,810 --> 00:16:24,120

and then I just uh sum this up sum up

383

00:16:29,449 --> 00:16:26,820

the changes to give the estimate of

384

00:16:30,710 --> 00:16:29,459

global sea level and so

385

00:16:32,750 --> 00:16:30,720

um

386

00:16:36,650 --> 00:16:32,760

so this is the estimated Global sea

387

00:16:38,749 --> 00:16:36,660

level as a function of installation here

388

00:16:42,470 --> 00:16:38,759

and this is the actual Global sea level

389

00:16:44,930 --> 00:16:42,480

so it doesn't doesn't do a great job

390

00:16:47,030 --> 00:16:44,940

predicting it get some of the the

391

00:16:48,910 --> 00:16:47,040

undulations here

392

00:16:51,889 --> 00:16:48,920

but there's a big lot there's a big

393

00:16:55,249 --> 00:16:51,899

discrepancy in level

394

00:16:58,129 --> 00:16:55,259

If I subtract the two you get this

395

00:17:00,410 --> 00:16:58,139

which is very interesting this could be

396

00:17:03,110 --> 00:17:00,420

interpreted as

397

00:17:06,350 --> 00:17:03,120

um sort of two two regimes here one is a

398

00:17:09,530 --> 00:17:06,360

period from about 130 000 years ago to

399

00:17:12,350 --> 00:17:09,540

about 20 000 years ago where sea levels

400

00:17:16,490 --> 00:17:12,360

are dropping and Isis is accumulating

401  
00:17:19,069 --> 00:17:16,500  
and then after the last uh uh Global

402  
00:17:21,650 --> 00:17:19,079  
maximum about twenty thousand years ago

403  
00:17:24,230 --> 00:17:21,660  
the ice began begins to melt and sea

404  
00:17:26,569 --> 00:17:24,240  
levels rise so again this is the

405  
00:17:28,669 --> 00:17:26,579  
difference between insulin between

406  
00:17:29,690 --> 00:17:28,679  
Global sea level and what's predicted by

407  
00:17:34,250 --> 00:17:29,700  
insulation

408  
00:17:35,930 --> 00:17:34,260  
predict

409  
00:17:38,990 --> 00:17:35,940  
so Burger

410  
00:17:41,210 --> 00:17:39,000  
sort of hit on the problem it's you know

411  
00:17:43,669 --> 00:17:41,220  
the problem is not how to make ice

412  
00:17:46,190 --> 00:17:43,679  
in a warm world but how to get rid of it

413  
00:17:50,630 --> 00:17:46,200

in an unusually cold world so it's like

414

00:17:52,430 --> 00:17:50,640

we're back here at the last glacial Max

415

00:17:55,610 --> 00:17:52,440

how did all this what caused all this

416

00:18:02,810 --> 00:17:58,310

well pole shifts can melt ice

417

00:18:04,909 --> 00:18:02,820

if we look at the polar regions for uh

418

00:18:07,250 --> 00:18:04,919

previous locations in the North Pole so

419

00:18:09,230 --> 00:18:07,260

this is um these locations would be the

420

00:18:13,070 --> 00:18:09,240

Hudson Bay the Greenland and the

421

00:18:16,370 --> 00:18:13,080

Norwegian sea they they actually pretty

422

00:18:19,970 --> 00:18:16,380

closely approximate the extent of the uh

423

00:18:22,490 --> 00:18:19,980

ice pack estimated ice pack at the time

424

00:18:24,350 --> 00:18:22,500

of the last glacial Max

425

00:18:27,350 --> 00:18:24,360

um and the references for this were this

426

00:18:29,210 --> 00:18:27,360

data come uh from his is in the is in

427

00:18:31,549 --> 00:18:29,220

the paper

428

00:18:33,529 --> 00:18:31,559

um and what's interesting is that one

429

00:18:35,870 --> 00:18:33,539

can imagine that if over this period of

430

00:18:38,510 --> 00:18:35,880

Time Ice was accumulating by the time

431

00:18:41,390 --> 00:18:38,520

you reached the lgm

432

00:18:43,490 --> 00:18:41,400

um it would be closely approximated by

433

00:18:45,350 --> 00:18:43,500

the union of these or the I should say

434

00:18:48,350 --> 00:18:45,360

yeah the the union of these of these

435

00:18:53,690 --> 00:18:50,270

um and so what could cause the eyes to

436

00:18:55,370 --> 00:18:53,700

melt is now if this uh situation were at

437

00:18:58,010 --> 00:18:55,380

the North Pole and then suddenly shifted

438

00:19:00,590 --> 00:18:58,020

South then all that ice would be shifted

439

00:19:02,510 --> 00:19:00,600

to lower latitude where insulation is

440

00:19:05,029 --> 00:19:02,520

greater and it would melt

441

00:19:07,430 --> 00:19:05,039

so pole shifts can melt ice it's sort of

442

00:19:09,350 --> 00:19:07,440

that non-linear factor that I think is

443

00:19:10,850 --> 00:19:09,360

needed in in these theories of climate

444

00:19:12,169 --> 00:19:10,860

change

445

00:19:13,730 --> 00:19:12,179

um but one that you know obviously

446

00:19:17,029 --> 00:19:13,740

climate scientists have been unwilling

447

00:19:20,450 --> 00:19:18,470

so

448

00:19:23,870 --> 00:19:20,460

um

449

00:19:27,529 --> 00:19:23,880

well does this actually work out well

450

00:19:29,690 --> 00:19:27,539

ice ice forms much more easily on land

451  
00:19:30,830 --> 00:19:29,700  
than it does on water particularly salt

452  
00:19:33,770 --> 00:19:30,840  
water

453  
00:19:37,370 --> 00:19:33,780  
um and uh so if you look at the land

454  
00:19:40,850 --> 00:19:37,380  
area at these hypothesized pole

455  
00:19:42,529 --> 00:19:40,860  
locations uh versus sea level

456  
00:19:45,850 --> 00:19:42,539  
we find there's actually a correlation

457  
00:19:48,650 --> 00:19:45,860  
so the amount of land so if in fact

458  
00:19:51,710 --> 00:19:48,660  
the sea levels are dropping because ice

459  
00:19:54,470 --> 00:19:51,720  
is building up at these poles uh that

460  
00:19:57,409 --> 00:19:54,480  
would be uh explainable or consistent

461  
00:20:00,350 --> 00:19:57,419  
with the amount of

462  
00:20:02,630 --> 00:20:00,360  
you know ice form being formed uh being

463  
00:20:04,850 --> 00:20:02,640

in proportion to the land area at those

464

00:20:06,529 --> 00:20:04,860

poles and it turns out that if we look

465

00:20:09,230 --> 00:20:06,539

at the sea level which is again

466

00:20:11,029 --> 00:20:09,240

inversely related to the amount of land

467

00:20:13,130 --> 00:20:11,039

um it's it's there's a pretty good

468

00:20:15,470 --> 00:20:13,140

degree of correlation it's you know 0.7

469

00:20:17,510 --> 00:20:15,480

is considered you know a strong

470

00:20:18,470 --> 00:20:17,520

correlation

471

00:20:22,490 --> 00:20:18,480

um

472

00:20:25,549 --> 00:20:22,500

that's r squared value uh between

473

00:20:27,950 --> 00:20:25,559

um land area at these hypothesized poles

474

00:20:30,890 --> 00:20:27,960

so this is the current pole the Bering

475

00:20:34,070 --> 00:20:30,900

Sea pole the Greenland the Norwegian Sea

476

00:20:36,830 --> 00:20:34,080

and the Hudson Bay Pole

477

00:20:40,150 --> 00:20:36,840

um so the Bering Sea pole was the poll

478

00:20:44,029 --> 00:20:40,160

just after the penultimate glacial Max

479

00:20:46,730 --> 00:20:44,039

as the current pole is the poll after

480

00:20:48,710 --> 00:20:46,740

the last glacial Max so these these are

481

00:20:51,049 --> 00:20:48,720

very similar

482

00:20:57,409 --> 00:20:55,070

so how do we get dates for these polls

483

00:20:59,750 --> 00:20:57,419

um you know have good cites a lot of

484

00:21:02,810 --> 00:20:59,760

climate data

485

00:21:06,470 --> 00:21:02,820

um a colleague of mine Mark Gaffney

486

00:21:10,610 --> 00:21:06,480

um did an analysis uh finding sources of

487

00:21:13,310 --> 00:21:10,620

mammal assembly Zone data in Britain

488

00:21:15,350 --> 00:21:13,320

um where basically these bone caves

489

00:21:18,289 --> 00:21:15,360

so-called bone caves

490

00:21:20,750 --> 00:21:18,299

um uh contain evidence of different um

491

00:21:22,789 --> 00:21:20,760

different mammoths uh I'm sorry

492

00:21:25,070 --> 00:21:22,799

different mammals

493

00:21:27,650 --> 00:21:25,080

um at different periods of time uh dated

494

00:21:30,529 --> 00:21:27,660

using you know uh stratigraphic

495

00:21:34,130 --> 00:21:30,539

information and

496

00:21:36,710 --> 00:21:34,140

what what what the data reveal is in one

497

00:21:38,810 --> 00:21:36,720

particular cave joint mittner

498

00:21:40,789 --> 00:21:38,820

um there was evidence of well not

499

00:21:43,070 --> 00:21:40,799

evidence there were there were fossil

500

00:21:46,370 --> 00:21:43,080

remains of hippopotamus and spotted

501  
00:21:49,370 --> 00:21:46,380  
hyena which are tropical or subtropical

502  
00:21:53,210 --> 00:21:49,380  
uh mammals

503  
00:21:57,470 --> 00:21:53,220  
um in bacon whole and other bone cave

504  
00:21:59,690 --> 00:21:57,480  
um they had Mammoth and bull uh fossils

505  
00:22:03,110 --> 00:21:59,700  
um at uh Banwell

506  
00:22:06,409 --> 00:22:03,120  
uh fossils of uh polar animals arctic

507  
00:22:09,590 --> 00:22:06,419  
fox reindeer and that uh these other

508  
00:22:13,070 --> 00:22:09,600  
caves here horses and and again woolly

509  
00:22:15,669 --> 00:22:13,080  
mammoth what's interesting is that these

510  
00:22:17,510 --> 00:22:15,679  
uh different uh

511  
00:22:21,409 --> 00:22:17,520  
mammals here

512  
00:22:22,669 --> 00:22:21,419  
are correlated with these uh these

513  
00:22:28,130 --> 00:22:22,679

climate zones

514

00:22:31,190 --> 00:22:28,140

at the if um if we look at the location

515

00:22:33,529 --> 00:22:31,200

of these caves uh their latitude

516

00:22:36,470 --> 00:22:33,539

relative these poles notice how they

517

00:22:38,390 --> 00:22:36,480

track so Banwell

518

00:22:39,710 --> 00:22:38,400

um well let you know let's go through it

519

00:22:42,770 --> 00:22:39,720

systematically we start with the

520

00:22:47,450 --> 00:22:42,780

tropical uh the earliest one um Bering

521

00:22:50,029 --> 00:22:47,460

Sea The Joint mittner cave was at um 20

522

00:22:52,130 --> 00:22:50,039

degrees latitude relative to the Bering

523

00:22:54,470 --> 00:22:52,140

Sea pole so it was in the tropical Zone

524

00:22:57,250 --> 00:22:54,480

and then the with pole shift from Bering

525

00:23:02,510 --> 00:22:57,260

Sea to Greenland it shifted to temperate

526

00:23:06,950 --> 00:23:02,520

and uh so shifted to about 55 degrees

527

00:23:11,210 --> 00:23:06,960

um where these uh polar mammals are

528

00:23:14,330 --> 00:23:11,220

found at at uh Banwell over this period

529

00:23:19,250 --> 00:23:14,340

of time based again on our model uh the

530

00:23:21,529 --> 00:23:19,260

North Pole uh being in the Norwegian sea

531

00:23:25,190 --> 00:23:21,539

um this cave would have been at a

532

00:23:28,490 --> 00:23:25,200

latitude of about 75 degrees uh so you

533

00:23:30,770 --> 00:23:28,500

know very in the polar region and uh and

534

00:23:32,990 --> 00:23:30,780

so forth for and then it later came out

535

00:23:35,210 --> 00:23:33,000

of the polar region as the pole shifted

536

00:23:37,010 --> 00:23:35,220

to Hudson Bay into the Arctic so these

537

00:23:39,590 --> 00:23:37,020

these correlations

538

00:23:43,070 --> 00:23:39,600

um between latitude climate zone and

539

00:23:44,510 --> 00:23:43,080

these different uh uh mammal uh fossil

540

00:23:48,049 --> 00:23:44,520

remains

541

00:23:52,070 --> 00:23:48,059

um uh Mark Gaffney used to to come up

542

00:23:54,350 --> 00:23:52,080

with the dating of of these polls

543

00:23:56,149 --> 00:23:54,360

so that's that sort of establishes the

544

00:23:58,549 --> 00:23:56,159

chronology here

545

00:24:02,090 --> 00:23:58,559

um which is again not inconsistent with

546

00:24:03,710 --> 00:24:02,100

with with uh with half Goods work it

547

00:24:06,230 --> 00:24:03,720

just sort of fleshes it out and refines

548

00:24:09,470 --> 00:24:06,240

it a little a little bit what uh was

549

00:24:10,669 --> 00:24:09,480

interesting now is finding that if we

550

00:24:13,789 --> 00:24:10,679

look at

551

00:24:16,310 --> 00:24:13,799

um we put this up against uh the sea

552

00:24:17,930 --> 00:24:16,320

level changes and now start looking at

553

00:24:21,110 --> 00:24:17,940

okay what else was going on in the world

554

00:24:24,710 --> 00:24:21,120

in terms of things like

555

00:24:27,770 --> 00:24:24,720

um magnetic or geomagnetic events or uh

556

00:24:30,490 --> 00:24:27,780

volcanic events it turns out

557

00:24:34,730 --> 00:24:30,500

there's been a number of what are called

558

00:24:37,850 --> 00:24:34,740

uh geomagnetic excursions excursions are

559

00:24:39,470 --> 00:24:37,860

shorter term reversals of the uh of the

560

00:24:42,289 --> 00:24:39,480

geomagnetic poles

561

00:24:45,950 --> 00:24:42,299

um or periods where they become uh

562

00:24:47,870 --> 00:24:45,960

unstable or they go to zero uh but these

563

00:24:49,970 --> 00:24:47,880

last uh tens hundreds thousands of years

564

00:24:53,210 --> 00:24:49,980

as opposed to millions of years that

565

00:24:56,510 --> 00:24:53,220

occur uh you know much longer time frame

566

00:24:59,210 --> 00:24:56,520

with geomagnetic uh reversals so these

567

00:25:02,870 --> 00:24:59,220

are sort of micro scale uh in time

568

00:25:06,409 --> 00:25:02,880

events and these are four I show Here

569

00:25:09,350 --> 00:25:06,419

Blake Norway Greenland the champ ongo

570

00:25:11,930 --> 00:25:09,360

and Gutenberg uh five within the last

571

00:25:15,950 --> 00:25:11,940

you know 120 000 years or so

572

00:25:19,909 --> 00:25:15,960

follow me these events we have a number

573

00:25:23,090 --> 00:25:19,919

of uh super volcanic eruptions the tobo

574

00:25:26,210 --> 00:25:23,100

of eruption which is the largest one

575

00:25:28,789 --> 00:25:26,220

um uh over and you know I forget exact

576

00:25:32,570 --> 00:25:28,799

period of time but it's it was uh an

577

00:25:35,750 --> 00:25:32,580

enormous ve uh Aid volcanic explosivity

578

00:25:37,370 --> 00:25:35,760

in index eight event uh one of the

579

00:25:39,710 --> 00:25:37,380

largest that you know is thought to have

580

00:25:42,169 --> 00:25:39,720

been responsible for uh mass extinctions

581

00:25:46,850 --> 00:25:42,179

this closely follows the Greenland

582

00:25:48,409 --> 00:25:46,860

Norway uh hypothesized pole shift uh and

583

00:25:50,029 --> 00:25:48,419

you know notice that there's a change in

584

00:25:53,149 --> 00:25:50,039

sea level that takes place after this

585

00:25:55,970 --> 00:25:53,159

similarly you know I I glossed over the

586

00:25:58,669 --> 00:25:55,980

Blake there isn't a known

587

00:26:01,190 --> 00:25:58,679

um volcanic event after that but there's

588

00:26:04,310 --> 00:26:01,200

also a fall off there and we see similar

589

00:26:07,549 --> 00:26:04,320

ones occurring here here and here so it

590

00:26:10,789 --> 00:26:07,559

appears that there might be some sort of

591

00:26:13,430 --> 00:26:10,799

uh connection between pole shifts and

592

00:26:14,870 --> 00:26:13,440

these other things that are taking place

593

00:26:17,269 --> 00:26:14,880

so

594

00:26:21,169 --> 00:26:17,279

um you know to be to be cautious here

595

00:26:22,850 --> 00:26:21,179

correlation yes uh causation maybe

596

00:26:24,350 --> 00:26:22,860

mechanism

597

00:26:25,490 --> 00:26:24,360

um who knows

598

00:26:28,669 --> 00:26:25,500

um

599

00:26:30,769 --> 00:26:28,679

we don't know uh but the flow is

600

00:26:33,830 --> 00:26:30,779

something like or the hypothesis is

601  
00:26:36,049 --> 00:26:33,840  
something like a magnetic uh Excursion

602  
00:26:38,630 --> 00:26:36,059  
or magnetic event occurs

603  
00:26:41,930 --> 00:26:38,640  
that results in a pole shift

604  
00:26:44,210 --> 00:26:41,940  
that then induces uh changes that cause

605  
00:26:46,370 --> 00:26:44,220  
super volcanic eruptions

606  
00:26:48,590 --> 00:26:46,380  
that lead to glacial events not just

607  
00:26:50,690 --> 00:26:48,600  
climate changes but long-term events so

608  
00:26:53,149 --> 00:26:50,700  
not just a bunch of smoke going up in

609  
00:26:54,590 --> 00:26:53,159  
the atmosphere or dust that later abates

610  
00:26:56,630 --> 00:26:54,600  
and you know the temperatures come back

611  
00:27:00,710 --> 00:26:56,640  
to normal but something more permanent

612  
00:27:03,890 --> 00:27:03,350  
so if we look at

613  
00:27:06,769 --> 00:27:03,900

um

614

00:27:08,810 --> 00:27:06,779

the Earth in a very simplified way in

615

00:27:10,789 --> 00:27:08,820

our magnetic field

616

00:27:11,510 --> 00:27:10,799

um the core field

617

00:27:14,090 --> 00:27:11,520

um

618

00:27:17,810 --> 00:27:14,100

uh can be modeled like uh you know the

619

00:27:21,490 --> 00:27:17,820

the the Thematic magnet magnetic lines

620

00:27:23,870 --> 00:27:21,500

from uh from a simple dipole bar magnet

621

00:27:25,610 --> 00:27:23,880

emanating at the North and coming back

622

00:27:27,529 --> 00:27:25,620

in the South

623

00:27:30,710 --> 00:27:27,539

um

624

00:27:33,950 --> 00:27:30,720

you know like the core field the the

625

00:27:36,830 --> 00:27:33,960

crust also has a field the um called the

626

00:27:38,390 --> 00:27:36,840

continental ferromagnetism and uh

627

00:27:41,210 --> 00:27:38,400

there's a North you know North Pole

628

00:27:43,490 --> 00:27:41,220

South Pole pair uh shown here

629

00:27:46,310 --> 00:27:43,500

um and it's you know it's different from

630

00:27:48,110 --> 00:27:46,320

the core field uh it's it's I mean it's

631

00:27:50,450 --> 00:27:48,120

similar but it's not exact

632

00:27:54,049 --> 00:27:50,460

it's not it's not uh completely

633

00:28:01,190 --> 00:27:59,269

so the the uh mechanism that um I

634

00:28:04,430 --> 00:28:01,200

suggest in the paper as a possible

635

00:28:07,370 --> 00:28:04,440

possible mechanism behind pole shifts is

636

00:28:11,330 --> 00:28:07,380

something like this that normally

637

00:28:12,830 --> 00:28:11,340

uh the crust and the mantle are locked

638

00:28:15,890 --> 00:28:12,840

together

639

00:28:17,930 --> 00:28:15,900

um in other words the uh the core field

640

00:28:21,649 --> 00:28:17,940

shown here

641

00:28:24,890 --> 00:28:21,659

that we saw earlier and the uh crustal

642

00:28:27,230 --> 00:28:24,900

field the Pharaoh Crystal paramagnetic

643

00:28:29,269 --> 00:28:27,240

field the lines

644

00:28:32,090 --> 00:28:29,279

um or flux are are in the same direction

645

00:28:35,090 --> 00:28:32,100

so everything is locked together

646

00:28:39,470 --> 00:28:35,100

um and the crust in effect uh sticks

647

00:28:43,310 --> 00:28:40,130

um

648

00:28:46,370 --> 00:28:43,320

now imagine a geomagnetic Excursion

649

00:28:49,430 --> 00:28:46,380

occurs with a with a core field flips

650

00:28:51,590 --> 00:28:49,440

so now it's going the opposite direction

651  
00:28:54,049 --> 00:28:51,600  
in this case now

652  
00:28:56,890 --> 00:28:54,059  
um this crust isn't stuck to the mantle

653  
00:28:59,870 --> 00:28:56,900  
but it could you know you know

654  
00:29:02,510 --> 00:28:59,880  
hypothetically move sort of like it

655  
00:29:04,789 --> 00:29:02,520  
could in some sense be floating to some

656  
00:29:07,730 --> 00:29:04,799  
degree over the mantle again this these

657  
00:29:11,510 --> 00:29:07,740  
are very preliminary qualitative uh

658  
00:29:14,390 --> 00:29:11,520  
ideas but the basic mechanism is you

659  
00:29:17,149 --> 00:29:14,400  
know you know is something that

660  
00:29:20,450 --> 00:29:17,159  
um you know presumably to some degree

661  
00:29:21,169 --> 00:29:20,460  
would uh occur if the

662  
00:29:23,269 --> 00:29:21,179  
um

663  
00:29:25,070 --> 00:29:23,279

if the field reversed there would be a

664

00:29:26,750 --> 00:29:25,080

reduced

665

00:29:28,490 --> 00:29:26,760

um uh

666

00:29:30,950 --> 00:29:28,500

uh the friction between the crust and

667

00:29:34,070 --> 00:29:30,960

the mantle would be re reversed or

668

00:29:36,169 --> 00:29:34,080

reduced and in under these conditions

669

00:29:39,950 --> 00:29:36,179

it's possible that the crust could move

670

00:29:40,549 --> 00:29:39,960

more easily so you know we're half good

671

00:29:42,710 --> 00:29:40,559

um

672

00:29:44,450 --> 00:29:42,720

was looking at the idea of the crust

673

00:29:50,510 --> 00:29:44,460

moving

674

00:29:52,190 --> 00:29:50,520

crust uh you know torquing it so much

675

00:29:55,490 --> 00:29:52,200

that it would move it over the mantle as

676  
00:29:58,310 --> 00:29:55,500  
is we're postulating a situation where

677  
00:30:01,310 --> 00:29:58,320  
the the friction between the mandolin

678  
00:30:04,250 --> 00:30:01,320  
crust could be reduced and if that were

679  
00:30:07,250 --> 00:30:04,260  
the case and it could then move

680  
00:30:09,769 --> 00:30:07,260  
during these periods then perhaps

681  
00:30:12,649 --> 00:30:09,779  
uh changes could take place under these

682  
00:30:15,470 --> 00:30:12,659  
situations and then at a later time when

683  
00:30:18,350 --> 00:30:15,480  
the uh core field reversed back to the

684  
00:30:19,570 --> 00:30:18,360  
normal Direction the Crestwood once

685  
00:30:22,970 --> 00:30:19,580  
again become

686  
00:30:25,970 --> 00:30:22,980  
locked uh to the mantle

687  
00:30:28,250 --> 00:30:25,980  
and so that's just summarized uh in this

688  
00:30:32,590 --> 00:30:30,769

so what could actually cause this to

689

00:30:37,250 --> 00:30:32,600

happen

690

00:30:40,310 --> 00:30:37,260

uh the the mechanism I propose is

691

00:30:43,310 --> 00:30:40,320

is this the tidal forces these are the

692

00:30:44,570 --> 00:30:43,320

forces that move uh Earth's oceans and

693

00:30:45,950 --> 00:30:44,580

it's kind of interesting after this

694

00:30:48,590 --> 00:30:45,960

paper came out

695

00:30:51,470 --> 00:30:48,600

um in in May it was around the same time

696

00:30:54,289 --> 00:30:51,480

I noticed a reference and um another

697

00:30:56,690 --> 00:30:54,299

group of researchers had proposed the

698

00:30:58,669 --> 00:30:56,700

idea that uh plate tectonics actually

699

00:31:01,130 --> 00:30:58,679

might be driven by

700

00:31:02,870 --> 00:31:01,140

um uh Earth Sun Moon tidal courses as

701  
00:31:05,090 --> 00:31:02,880  
well

702  
00:31:07,669 --> 00:31:05,100  
um and it's also been

703  
00:31:10,130 --> 00:31:07,679  
um thought to be a factor in earthquakes

704  
00:31:11,210 --> 00:31:10,140  
in certain types of earthquakes

705  
00:31:13,610 --> 00:31:11,220  
um

706  
00:31:16,669 --> 00:31:13,620  
so what I'm proposing here is that

707  
00:31:19,430 --> 00:31:16,679  
during periods of of a geometric

708  
00:31:21,409 --> 00:31:19,440  
magnetic reversals where the crust

709  
00:31:24,769 --> 00:31:21,419  
becomes unlocked from the mantle the

710  
00:31:27,289 --> 00:31:24,779  
moon would pull on the crust just in the

711  
00:31:29,330 --> 00:31:27,299  
same way it pulls on the oceans

712  
00:31:31,490 --> 00:31:29,340  
um but obviously being more massive it

713  
00:31:32,810 --> 00:31:31,500

would take place over a much you know

714

00:31:34,310 --> 00:31:32,820

longer period of time much more

715

00:31:35,570 --> 00:31:34,320

gradually

716

00:31:37,669 --> 00:31:35,580

um so it wouldn't be an instantaneous

717

00:31:38,269 --> 00:31:37,679

event but over time

718

00:31:41,210 --> 00:31:38,279

um

719

00:31:42,350 --> 00:31:41,220

you know with enough uh you know given

720

00:31:46,130 --> 00:31:42,360

enough time

721

00:31:49,370 --> 00:31:46,140

uh if the friction were reduced uh

722

00:31:52,250 --> 00:31:49,380

between the mantle encrust to a point to

723

00:31:54,590 --> 00:31:52,260

allow the forces to overcome that then

724

00:31:55,669 --> 00:31:54,600

we could begin to see a movement of the

725

00:31:58,370 --> 00:31:55,679

crust

726  
00:31:59,930 --> 00:31:58,380  
um by the moon

727  
00:32:05,510 --> 00:31:59,940  
now

728  
00:32:06,590 --> 00:32:05,520  
perhaps a little far-fetched

729  
00:32:10,490 --> 00:32:06,600  
um

730  
00:32:12,470 --> 00:32:10,500  
let me let me just take a step back and

731  
00:32:13,370 --> 00:32:12,480  
uh because this has gotten a it's a

732  
00:32:17,110 --> 00:32:13,380  
little

733  
00:32:20,930 --> 00:32:17,120  
speculative but what we can do is

734  
00:32:23,930 --> 00:32:20,940  
create a simulation of of what would

735  
00:32:26,090 --> 00:32:23,940  
happen using um using a model of the

736  
00:32:28,789 --> 00:32:26,100  
Earth's crust it's a crust one zero

737  
00:32:31,010 --> 00:32:28,799  
model 1.0 model

738  
00:32:33,710 --> 00:32:31,020

um that uh

739

00:32:36,470 --> 00:32:33,720

represents the thickness and density of

740

00:32:38,409 --> 00:32:36,480

the crust and we from that we could

741

00:32:41,269 --> 00:32:38,419

actually compute the moments of inertia

742

00:32:43,190 --> 00:32:41,279

so this is of the crust not not the

743

00:32:46,070 --> 00:32:43,200

whole Earth but just of the crust

744

00:32:49,070 --> 00:32:46,080

and we can do it with and without ice so

745

00:32:52,430 --> 00:32:49,080

we can look at the amount of ice pack at

746

00:32:54,470 --> 00:32:52,440

the time of the lgm and uh and see you

747

00:32:56,570 --> 00:32:54,480

know how that affects the moments of

748

00:33:00,110 --> 00:32:56,580

inertia if we do that

749

00:33:02,990 --> 00:33:00,120

we find without ice we have What's

750

00:33:06,169 --> 00:33:03,000

called the theoretical axis uh

751

00:33:08,570 --> 00:33:06,179

uh theoretical rotational axis being

752

00:33:11,690 --> 00:33:08,580

located at um

753

00:33:15,289 --> 00:33:11,700

at a latitude of one by one degree North

754

00:33:18,590 --> 00:33:15,299

and 18 plus degrees west

755

00:33:21,049 --> 00:33:18,600

this is like practically on the equator

756

00:33:24,169 --> 00:33:21,059

so that's without ice with with ice it's

757

00:33:27,710 --> 00:33:24,179

it's about the same it only changes um

758

00:33:28,250 --> 00:33:27,720

about about 20 kilometers

759

00:33:30,769 --> 00:33:28,260

um

760

00:33:33,110 --> 00:33:30,779

what's interesting is that this is not

761

00:33:34,789 --> 00:33:33,120

the theoretical axis rotation of the

762

00:33:37,490 --> 00:33:34,799

earth you know the rotational axis of

763

00:33:38,990 --> 00:33:37,500

the earth is is is is 90 degrees away

764

00:33:42,350 --> 00:33:39,000

it's the you know roughly in the polar

765

00:33:44,690 --> 00:33:42,360

regions this tra

766

00:33:47,029 --> 00:33:44,700

um theoretical rotational axis is near

767

00:33:49,310 --> 00:33:47,039

the equator

768

00:33:53,570 --> 00:33:52,130

and so if we plot it

769

00:33:55,310 --> 00:33:53,580

um

770

00:33:57,289 --> 00:33:55,320

and these are the dotted lines or the

771

00:33:59,029 --> 00:33:57,299

zones of the tropics

772

00:34:00,950 --> 00:33:59,039

we see it you know it's very close to

773

00:34:04,909 --> 00:34:00,960

the equator

774

00:34:08,329 --> 00:34:04,919

we could plot the tra's relative to the

775

00:34:12,290 --> 00:34:08,339

to the other poles for Hudson Bay

776

00:34:14,149 --> 00:34:12,300

and the Norwegian sea and Greenland and

777

00:34:16,970 --> 00:34:14,159

Bering Sea

778

00:34:19,310 --> 00:34:16,980

and they all are roughly

779

00:34:22,129 --> 00:34:19,320

within the zone of the tropics

780

00:34:24,889 --> 00:34:22,139

now what's interesting about this is the

781

00:34:28,669 --> 00:34:24,899

zone of the tropics is

782

00:34:31,070 --> 00:34:28,679

the direction within which tidal forces

783

00:34:35,329 --> 00:34:31,080

you know act directly this you know the

784

00:34:38,389 --> 00:34:35,339

the ecliptic uh the line along which the

785

00:34:40,070 --> 00:34:38,399

moon and the sun planets move but we're

786

00:34:40,790 --> 00:34:40,080

concerned mainly with the Sun and the

787

00:34:43,490 --> 00:34:40,800

Moon

788

00:34:46,550 --> 00:34:43,500

uh they have they're they're confined in

789

00:34:52,010 --> 00:34:46,560

this region so this suggests that if

790

00:34:54,109 --> 00:34:52,020

they were at play they were uh torquing

791

00:34:56,389 --> 00:34:54,119

um creating tidal forces that were

792

00:34:58,970 --> 00:34:56,399

pulling on the earth they would act in

793

00:35:00,530 --> 00:34:58,980

this area and their influence would be

794

00:35:01,730 --> 00:35:00,540

limited to this part of the earth so

795

00:35:03,770 --> 00:35:01,740

they wouldn't you wouldn't expect them

796

00:35:05,990 --> 00:35:03,780

to be able to jerk

797

00:35:08,329 --> 00:35:06,000

um you know the crust way up here or way

798

00:35:11,210 --> 00:35:08,339

down there and in fact that's that's

799

00:35:13,250 --> 00:35:11,220

sort of what we see here

800

00:35:16,490 --> 00:35:13,260

so

801  
00:35:17,030 --> 00:35:16,500  
um again this is this this data

802  
00:35:19,550 --> 00:35:17,040  
um

803  
00:35:20,870 --> 00:35:19,560  
are very preliminary

804  
00:35:29,329 --> 00:35:20,880  
uh

805  
00:35:30,050 --> 00:35:29,339  
suggest a new Direction in in research

806  
00:35:32,950 --> 00:35:30,060  
um

807  
00:35:37,430 --> 00:35:32,960  
uh to at least suggest the possibility

808  
00:35:38,810 --> 00:35:37,440  
that we haven't really been looking uh

809  
00:35:41,569 --> 00:35:38,820  
we haven't covered the bases there's

810  
00:35:43,370 --> 00:35:41,579  
some other possibilities and we you know

811  
00:35:46,310 --> 00:35:43,380  
we shouldn't rule out pretzel

812  
00:35:51,190 --> 00:35:46,320  
displacement Theory uh it's still uh

813  
00:35:54,770 --> 00:35:51,200

should be considered a a possible

814

00:35:57,950 --> 00:35:54,780

phenomenon and perhaps even as I've

815

00:36:00,950 --> 00:35:57,960

shown here A A A plausible explanation

816

00:36:03,650 --> 00:36:00,960

for for climate change in in the ice

817

00:36:06,470 --> 00:36:04,670

um

818

00:36:09,710 --> 00:36:06,480

so what I'm suggesting is you know if

819

00:36:11,390 --> 00:36:09,720

this is the the current theory uh of

820

00:36:13,370 --> 00:36:11,400

climate change

821

00:36:14,870 --> 00:36:13,380

by adding in what we've talked about

822

00:36:16,250 --> 00:36:14,880

here

823

00:36:19,069 --> 00:36:16,260

um

824

00:36:21,950 --> 00:36:19,079

we don't know what causes geomagnetic

825

00:36:25,430 --> 00:36:21,960

excursions uh there's been there's a lot

826

00:36:28,250 --> 00:36:25,440

of speculation a lot of theories but uh

827

00:36:31,430 --> 00:36:28,260

if these do in fact unlock the crust and

828

00:36:34,010 --> 00:36:31,440

then tidal forces are able to displace

829

00:36:36,290 --> 00:36:34,020

the crust this could be the non-linear

830

00:36:39,650 --> 00:36:36,300

factor that really together with

831

00:36:42,530 --> 00:36:39,660

insulation explains uh temperature sea

832

00:36:46,550 --> 00:36:42,540

level and and polar ice

833

00:36:49,069 --> 00:36:46,560

so it you know in summary

834

00:36:51,890 --> 00:36:49,079

Hopkins Theory uh

835

00:36:53,569 --> 00:36:51,900

maybe the list the The Missing Link and

836

00:36:55,310 --> 00:36:53,579

not understanding long-term climate

837

00:36:58,609 --> 00:36:55,320

change which is what half could set out

838

00:37:01,310 --> 00:36:58,619

to do but in my interest uh what I

839

00:37:03,349 --> 00:37:01,320

started talking about up front was the

840

00:37:05,930 --> 00:37:03,359

rise and fall of past civilizations and

841

00:37:10,550 --> 00:37:05,940

this was really the motivation behind

842

00:37:14,030 --> 00:37:10,560

how I got interested in in it and um and

843

00:37:16,130 --> 00:37:14,040

sort of what what led me to to

844

00:37:19,730 --> 00:37:16,140

to try to figure it out no one else

845

00:37:21,829 --> 00:37:19,740

after having published these papers on

846

00:37:23,630 --> 00:37:21,839

the pole shift hypothesis and the

847

00:37:25,790 --> 00:37:23,640

shifted pole model and looking at

848

00:37:28,130 --> 00:37:25,800

archaeological sites I was hoping

849

00:37:30,410 --> 00:37:28,140

someone would come along and and come up

850

00:37:32,810 --> 00:37:30,420

with some you know new version of hap

851  
00:37:36,109 --> 00:37:32,820  
Goods Theory hapco 2.0 which is what I

852  
00:37:41,150 --> 00:37:36,119  
called it no one had so in the meantime

853  
00:37:42,950 --> 00:37:41,160  
uh this uh this is my uh attempt to at

854  
00:37:44,930 --> 00:37:42,960  
least get the ball rolling

855  
00:37:47,450 --> 00:37:44,940  
um to the extent that an electrical

856  
00:37:49,430 --> 00:37:47,460  
engineer can do so but you know I think

857  
00:37:51,410 --> 00:37:49,440  
the the understanding uh you know

858  
00:37:53,450 --> 00:37:51,420  
basically the correlations are there

859  
00:37:56,930 --> 00:37:53,460  
whether you know we actually have

860  
00:37:59,030 --> 00:37:56,940  
causation and whether this uh can stand

861  
00:38:01,550 --> 00:37:59,040  
up to physical theories

862  
00:38:04,010 --> 00:38:01,560  
um physical models of more detailed

863  
00:38:07,069 --> 00:38:04,020

models of the crust and and magnetism

864

00:38:10,010 --> 00:38:07,079

and Earth changes and so forth uh really

865

00:38:12,829 --> 00:38:10,020

I leave that up to the experts but uh in

866

00:38:15,349 --> 00:38:12,839

all humility I I offer this up as an

867

00:38:17,329 --> 00:38:15,359

attempt to get uh to get us out of uh

868

00:38:19,670 --> 00:38:17,339

what appears to be a dead end we just

869

00:38:23,030 --> 00:38:19,680

don't seem to understand climate change

870

00:38:26,630 --> 00:38:23,040

and we don't seem to understand uh how

871

00:38:29,170 --> 00:38:26,640

our civilization uh has gotten here

872

00:38:32,569 --> 00:38:29,180

um there are many enigmas that

873

00:38:34,069 --> 00:38:32,579

we're kind of stuck and uh this is

874

00:38:36,710 --> 00:38:34,079

perhaps a new direction that we can move

875

00:38:51,970 --> 00:38:36,720

in so I thank you for your time and I

876

00:38:56,690 --> 00:38:54,230

thank you Mark I'm trying to see how we

877

00:38:59,089 --> 00:38:56,700

can make your screen

878

00:39:01,670 --> 00:38:59,099

full size here

879

00:39:04,370 --> 00:39:01,680

um there we go I don't know how that

880

00:39:09,370 --> 00:39:04,380

happened all right uh very interesting

881

00:39:11,750 --> 00:39:09,380

talk and um I'd like to remind our uh

882

00:39:13,550 --> 00:39:11,760

participants here that

883

00:39:15,530 --> 00:39:13,560

um if you have questions please type

884

00:39:17,030 --> 00:39:15,540

them in the Q a box not in the chat

885

00:39:18,890 --> 00:39:17,040

window

886

00:39:20,270 --> 00:39:18,900

um and then we're going to start to

887

00:39:23,390 --> 00:39:20,280

address the questions here we already

888

00:39:25,490 --> 00:39:23,400

have a couple so if you're ready we'll

889

00:39:28,790 --> 00:39:25,500

Dive Right In

890

00:39:30,829 --> 00:39:28,800

good okay so uh this question actually

891

00:39:33,710 --> 00:39:30,839

came from a YouTube viewer who was

892

00:39:36,230 --> 00:39:33,720

watching this live stream on YouTube uh

893

00:39:38,270 --> 00:39:36,240

could you elaborate on the increase in

894

00:39:43,089 --> 00:39:38,280

title bulge at the equatorial regions

895

00:39:47,450 --> 00:39:46,190

so this is a question on uh this is this

896

00:39:50,930 --> 00:39:47,460

is more of a

897

00:39:51,770 --> 00:39:50,940

quantitative uh sort of question

898

00:39:54,349 --> 00:39:51,780

um

899

00:39:55,190 --> 00:39:54,359

and I don't I don't know the answer to

900

00:39:58,550 --> 00:39:55,200

that

901  
00:40:00,890 --> 00:39:58,560  
um what I'm suggesting not so much in

902  
00:40:03,230 --> 00:40:00,900  
terms of magnitudes but sort of just

903  
00:40:05,690 --> 00:40:03,240  
just general a general phenomenon that

904  
00:40:08,089 --> 00:40:05,700  
that could occur I I think you're going

905  
00:40:11,210 --> 00:40:08,099  
to require and I assume by title but

906  
00:40:14,089 --> 00:40:11,220  
this would be a bulge of the crust

907  
00:40:17,150 --> 00:40:14,099  
um and uh you know I don't I don't have

908  
00:40:19,310 --> 00:40:17,160  
those models available

909  
00:40:22,370 --> 00:40:19,320  
um this is uh you know again I appeal to

910  
00:40:23,750 --> 00:40:22,380  
uh to the geoscientists out there and

911  
00:40:26,690 --> 00:40:23,760  
the physicists

912  
00:40:30,170 --> 00:40:26,700  
um that um that could you know write a

913  
00:40:32,390 --> 00:40:30,180

finite element uh simulation and and do

914

00:40:34,310 --> 00:40:32,400

these computations it's sort of Beyond

915

00:40:37,010 --> 00:40:34,320

um what I'm able to do right now so I do

916

00:40:38,569 --> 00:40:37,020

not know what the extent of that bulge

917

00:40:40,730 --> 00:40:38,579

would be

918

00:40:43,609 --> 00:40:40,740

um I would I would expect it's you know

919

00:40:46,069 --> 00:40:43,619

it's it's it's certainly going to be uh

920

00:40:49,750 --> 00:40:46,079

much smaller than you find you know the

921

00:40:53,450 --> 00:40:49,760

the ocean uh the oceans uh high low tide

922

00:40:56,390 --> 00:40:53,460

uh berries uh by a considerable degree

923

00:40:58,250 --> 00:40:56,400

this would be much smaller and uh and

924

00:41:01,490 --> 00:40:58,260

again as I indicated

925

00:41:04,010 --> 00:41:01,500

um in in the talk in the paper the uh

926

00:41:06,170 --> 00:41:04,020

the effect would be uh a much smaller

927

00:41:08,870 --> 00:41:06,180

force over a much longer period of time

928

00:41:11,210 --> 00:41:08,880

so uh given you know you could overcome

929

00:41:13,670 --> 00:41:11,220

that initial friction

930

00:41:16,910 --> 00:41:13,680

um you can could move it slowly ever so

931

00:41:19,130 --> 00:41:16,920

slowly but over you know enough time it

932

00:41:20,930 --> 00:41:19,140

would there would be enough enough Force

933

00:41:23,210 --> 00:41:20,940

there's certainly enough energy there to

934

00:41:25,910 --> 00:41:23,220

do it whether or not it can overcome the

935

00:41:28,370 --> 00:41:25,920

the frictional force and and that

936

00:41:31,849 --> 00:41:28,380

depends on the degree to which the

937

00:41:33,349 --> 00:41:31,859

magnetic reversal would reduce the um

938

00:41:36,230 --> 00:41:33,359

the friction between the crust and the

939

00:41:37,670 --> 00:41:36,240

mantle and again that is these are these

940

00:41:40,310 --> 00:41:37,680

are ideas

941

00:41:42,290 --> 00:41:40,320

um uh the uh but but they're very

942

00:41:46,069 --> 00:41:42,300

they're very qualitative at this point

943

00:41:48,650 --> 00:41:46,079

so um if uh if the uh if the person

944

00:41:51,470 --> 00:41:48,660

asked the question has any ideas I'd be

945

00:41:53,329 --> 00:41:51,480

very interested to hear them

946

00:41:55,010 --> 00:41:53,339

wonderful thank you

947

00:41:57,349 --> 00:41:55,020

okay

948

00:41:59,510 --> 00:41:57,359

um all right we've got some more

949

00:42:01,130 --> 00:41:59,520

questions coming in and again reminding

950

00:42:03,109 --> 00:42:01,140

people to feel free to type them in or

951  
00:42:05,569 --> 00:42:03,119  
upvote the questions that you see in the

952  
00:42:07,310 --> 00:42:05,579  
window that you would especially like to

953  
00:42:09,650 --> 00:42:07,320  
see answered

954  
00:42:11,569 --> 00:42:09,660  
um uh Margaret Moga asks my

955  
00:42:13,609 --> 00:42:11,579  
understanding is the geomagnetic

956  
00:42:16,550 --> 00:42:13,619  
excursions are relatively slow but the

957  
00:42:17,930 --> 00:42:16,560  
full axis shifts can happen quickly is

958  
00:42:20,329 --> 00:42:17,940  
this true

959  
00:42:23,150 --> 00:42:20,339  
well you know I think I I don't think

960  
00:42:26,510 --> 00:42:23,160  
anyone really knows uh you know there's

961  
00:42:28,609 --> 00:42:26,520  
uh if you look up hapgood's Theory uh

962  
00:42:31,550 --> 00:42:28,619  
the Wikipedia entry comes up on

963  
00:42:35,750 --> 00:42:31,560

catastrophic pole shift hypothesis and

964

00:42:37,670 --> 00:42:35,760

uh you know this uh uh this in in this

965

00:42:39,710 --> 00:42:37,680

hypothesis it's generally assumed that

966

00:42:42,470 --> 00:42:39,720

this is something that happens very

967

00:42:45,410 --> 00:42:42,480

quickly it's cataclysmic causes floods

968

00:42:47,750 --> 00:42:45,420

and uh things of that sort which uh you

969

00:42:48,950 --> 00:42:47,760

know which tie into myth and Legend

970

00:42:51,530 --> 00:42:48,960

um I mean there may be that connection

971

00:42:54,410 --> 00:42:51,540

who knows but I don't think we really

972

00:42:56,870 --> 00:42:54,420

know how quickly the polls under these

973

00:42:58,010 --> 00:42:56,880

circumstances could move we we do know

974

00:42:58,910 --> 00:42:58,020

that

975

00:43:02,510 --> 00:42:58,920

um

976

00:43:06,530 --> 00:43:02,520

uh in in the past there's been some very

977

00:43:08,270 --> 00:43:06,540

large changes in uh the Earth's uh poles

978

00:43:11,410 --> 00:43:08,280

based on

979

00:43:14,510 --> 00:43:11,420

um over millions of years using um

980

00:43:16,849 --> 00:43:14,520

paleomagnetic uh data to basically track

981

00:43:19,550 --> 00:43:16,859

uh you know as evidence for these these

982

00:43:21,770 --> 00:43:19,560

pole shifts and so they they they occur

983

00:43:23,930 --> 00:43:21,780

very slowly over you know time scales of

984

00:43:26,030 --> 00:43:23,940

millions of years

985

00:43:27,530 --> 00:43:26,040

um suggesting something probably you

986

00:43:30,170 --> 00:43:27,540

know well something obviously more

987

00:43:31,790 --> 00:43:30,180

quicker here on the order maybe uh

988

00:43:33,829 --> 00:43:31,800

hundreds or thousands of years you know

989

00:43:36,589 --> 00:43:33,839

looking at you know the last 130 000

990

00:43:38,210 --> 00:43:36,599

years if there's been five pole shifts

991

00:43:40,430 --> 00:43:38,220

you know um

992

00:43:42,109 --> 00:43:40,440

you know it's probably on the order of a

993

00:43:44,809 --> 00:43:42,119

hundred or a thousand years it can't be

994

00:43:46,490 --> 00:43:44,819

much longer than that but again the time

995

00:43:48,650 --> 00:43:46,500

constant on that it's going to have to

996

00:43:51,710 --> 00:43:48,660

do with the the friction and the amount

997

00:43:53,210 --> 00:43:51,720

of force and uh it's probably possible

998

00:43:55,250 --> 00:43:53,220

to calculate it

999

00:43:58,430 --> 00:43:55,260

um but I don't know the answer again

1000

00:44:01,010 --> 00:43:58,440

anyone that has uh anyone is interested

1001

00:44:03,589 --> 00:44:01,020

in in joining in on this research I I I

1002

00:44:06,530 --> 00:44:03,599

I invite them and I encourage them

1003

00:44:10,130 --> 00:44:06,540

because uh it's uh you know I I think

1004

00:44:12,230 --> 00:44:10,140

there are like this crust 1.0 model

1005

00:44:14,630 --> 00:44:12,240

that's available out there this is

1006

00:44:16,550 --> 00:44:14,640

something Einstein didn't have you know

1007

00:44:18,589 --> 00:44:16,560

his his calculations were back the

1008

00:44:20,930 --> 00:44:18,599

envelope now we can actually simulate

1009

00:44:23,150 --> 00:44:20,940

and compute moments of inertia and we

1010

00:44:25,130 --> 00:44:23,160

can you can do a lot of hypothesizing

1011

00:44:28,250 --> 00:44:25,140

and a lot of testing so you know I think

1012

00:44:30,230 --> 00:44:28,260

the uh the data and the tools are there

1013

00:44:31,970 --> 00:44:30,240

um I think people just have to do it and

1014

00:44:33,650 --> 00:44:31,980

people that have the expertise to take

1015

00:44:36,770 --> 00:44:33,660

it you know to the next level

1016

00:44:38,809 --> 00:44:36,780

so thanks Margaret for your question

1017

00:44:41,390 --> 00:44:38,819

great

1018

00:44:43,970 --> 00:44:41,400

all right a question from uh John

1019

00:44:46,970 --> 00:44:43,980

McDonough could a gigantic hall effect

1020

00:44:49,730 --> 00:44:46,980

cause the volcanic eruptions after a

1021

00:44:51,770 --> 00:44:49,740

geomagnetic quick change are they in the

1022

00:44:54,349 --> 00:44:51,780

right place

1023

00:44:56,270 --> 00:44:54,359

uh John you know

1024

00:44:57,829 --> 00:44:56,280

I don't know uh about that I was

1025

00:44:59,690 --> 00:44:57,839

thinking of it more in terms of a

1026

00:45:00,430 --> 00:44:59,700

geological

1027

00:45:03,349 --> 00:45:00,440

um

1028

00:45:05,390 --> 00:45:03,359

uh you know sort of the effect of the of

1029

00:45:07,550 --> 00:45:05,400

the crust moving over the mantle you

1030

00:45:08,870 --> 00:45:07,560

know there's these mantle plumes and

1031

00:45:11,870 --> 00:45:08,880

there's a lot of stuff going on under

1032

00:45:15,650 --> 00:45:11,880

the crust that uh you know we're under

1033

00:45:17,930 --> 00:45:15,660

uh where volcanoes are and uh and uh in

1034

00:45:20,329 --> 00:45:17,940

hot spots and so forth

1035

00:45:22,430 --> 00:45:20,339

um and so if the crust does start moving

1036

00:45:24,770 --> 00:45:22,440

and and these you know faults start

1037

00:45:27,829 --> 00:45:24,780

shifting you know this could be a reason

1038

00:45:30,530 --> 00:45:27,839

why uh in places where the crust is

1039

00:45:33,530 --> 00:45:30,540

weaker uh the mag you know the Magnus

1040

00:45:36,349 --> 00:45:33,540

you know comes up and and uh creates new

1041

00:45:38,270 --> 00:45:36,359

volcanoes or or causes old ones to

1042

00:45:39,170 --> 00:45:38,280

re-erupt I don't know

1043

00:45:41,569 --> 00:45:39,180

um

1044

00:45:44,030 --> 00:45:41,579

again that's uh that's that's a little

1045

00:45:46,609 --> 00:45:44,040

bit beyond my uh area of expertise but

1046

00:45:49,190 --> 00:45:46,619

uh if you have any ideas on on how that

1047

00:45:53,510 --> 00:45:49,200

could happen again I I'd be very

1048

00:46:00,050 --> 00:45:56,770

great let's see here uh

1049

00:46:06,349 --> 00:46:02,750

um a question from one of the Facebook

1050

00:46:07,849 --> 00:46:06,359

viewers uh has anyone considered that

1051

00:46:10,970 --> 00:46:07,859

there may be two different types of

1052

00:46:13,430 --> 00:46:10,980

Torah excuse me in the Earth's magnetic

1053

00:46:16,010 --> 00:46:13,440

magnetosphere a traditional donut shape

1054

00:46:22,849 --> 00:46:16,020

and another Globe shaped Taurus which

1055

00:46:26,150 --> 00:46:24,470

um and it looks like there's some

1056

00:46:28,430 --> 00:46:26,160

additional stuff from that same person

1057

00:46:32,930 --> 00:46:28,440

the globe shaped Taurus could flip while

1058

00:46:32,940 --> 00:46:35,030

um

1059

00:46:39,109 --> 00:46:37,309

yeah yeah you know this this might be

1060

00:46:41,390 --> 00:46:39,119

sort of a second order thing I'm I'm

1061

00:46:43,490 --> 00:46:41,400

just I'm I'm kind of looking at more

1062

00:46:47,329 --> 00:46:43,500

sort of first order back of the envelope

1063

00:46:49,970 --> 00:46:47,339

uh mechanisms that you know established

1064

00:46:53,030 --> 00:46:49,980

that established plausibility you know

1065

00:46:54,770 --> 00:46:53,040

our our forces you know within an order

1066

00:46:56,450 --> 00:46:54,780

of magnitude

1067

00:46:59,030 --> 00:46:56,460

um you know sufficient for things to

1068

00:47:01,370 --> 00:46:59,040

happen without really thinking too much

1069

00:47:02,930 --> 00:47:01,380

about the specifics about how they might

1070

00:47:07,430 --> 00:47:02,940

happen

1071

00:47:08,870 --> 00:47:07,440

again I I'm deflecting a lot of these

1072

00:47:11,690 --> 00:47:08,880

questions because these are really kind

1073

00:47:13,130 --> 00:47:11,700

of outside the scope of you know what

1074

00:47:15,410 --> 00:47:13,140

I've thought about and what's in the

1075

00:47:16,970 --> 00:47:15,420

paper but uh certainly things that would

1076

00:47:20,150 --> 00:47:16,980

you know you'd want to be thinking about

1077

00:47:22,069 --> 00:47:20,160

but I haven't done so thank you

1078

00:47:25,190 --> 00:47:22,079

okay

1079

00:47:27,890 --> 00:47:25,200

another question from uh one of our

1080

00:47:30,170 --> 00:47:27,900

YouTube viewers was Britain sitting near

1081

00:47:32,870 --> 00:47:30,180

the equator several thousand years ago

1082

00:47:36,710 --> 00:47:32,880

and can we tell how the land mass is

1083

00:47:38,630 --> 00:47:36,720

shifted as a whole or independently

1084

00:47:40,510 --> 00:47:38,640

thank you for that question this is a

1085

00:47:43,970 --> 00:47:40,520

question I can answer

1086

00:47:46,970 --> 00:47:43,980

so uh you know my main air of Interest

1087

00:47:49,069 --> 00:47:46,980

here is is in um is the connection

1088

00:47:49,609 --> 00:47:49,079

between pole ships

1089

00:47:51,710 --> 00:47:49,619

um

1090

00:47:52,849 --> 00:47:51,720

previous locations the North Pole and

1091

00:47:55,490 --> 00:47:52,859

previous

1092

00:47:56,210 --> 00:47:55,500

uh if you will World ages

1093

00:47:58,849 --> 00:47:56,220

um

1094

00:48:01,750 --> 00:47:58,859

you know my hypothesis in the shifted

1095

00:48:04,790 --> 00:48:01,760

pole hypothesis paper published in 2020

1096

00:48:07,670 --> 00:48:04,800

is that the sites that are built in

1097

00:48:10,010 --> 00:48:07,680

alignment to these older polls uh were

1098

00:48:13,970 --> 00:48:10,020

built tens of thousands of years ago so

1099

00:48:15,950 --> 00:48:13,980

a site like um like ball back in

1100

00:48:22,730 --> 00:48:15,960

in Jordan

1101

00:48:26,210 --> 00:48:22,740

you know it's it's well known to be on

1102

00:48:29,990 --> 00:48:26,220

Ancient foundations and uh based on this

1103

00:48:32,870 --> 00:48:30,000

model could be 75 230 000 years old

1104

00:48:35,930 --> 00:48:32,880

so you know this is this is sort of the

1105

00:48:38,630 --> 00:48:35,940

motivation for me uh I teamed up with uh

1106

00:48:41,630 --> 00:48:38,640

an environmentalist who was able to uh

1107

00:48:44,390 --> 00:48:41,640

identify a lot of uh a lot of older

1108

00:48:47,210 --> 00:48:44,400

papers that and and so getting to uh

1109

00:48:49,490 --> 00:48:47,220

this question here the paper that Mark

1110

00:48:53,030 --> 00:48:49,500

uh or papers Mark found had to do with

1111

00:48:55,910 --> 00:48:53,040

these um uh mammal assemblage zones in

1112

00:48:58,550 --> 00:48:55,920

Britain and uh yes an answer so the

1113

00:49:03,349 --> 00:48:58,560

short answer to this question is yes

1114

00:49:06,109 --> 00:49:03,359

um uh about 130 000 years ago uh the uh

1115

00:49:09,530 --> 00:49:06,119

dated uh bones and these bone caves

1116

00:49:12,470 --> 00:49:09,540

suggest that Britain was in fact uh

1117

00:49:14,930 --> 00:49:12,480

within a subtropical zone so you know

1118

00:49:17,630 --> 00:49:14,940

that's that's probably 20 you know plus

1119

00:49:21,349 --> 00:49:17,640

minus 20 degrees away from the equator

1120

00:49:24,050 --> 00:49:21,359

so not several thousand years ago but

1121

00:49:26,510 --> 00:49:24,060

um 130 000 years ago and this was the

1122

00:49:29,930 --> 00:49:26,520

time when the North Pole hypothesized

1123

00:49:31,730 --> 00:49:29,940

was in the Bering Sea so the North Pole

1124

00:49:34,250 --> 00:49:31,740

at that location you go to Google Earth

1125

00:49:37,309 --> 00:49:34,260

and you take your your ruler tool

1126

00:49:38,410 --> 00:49:37,319

you'll find that uh Britain was about 70

1127

00:49:42,470 --> 00:49:38,420

degrees

1128

00:49:45,470 --> 00:49:42,480

away from uh the Bering Sea at that time

1129

00:49:48,650 --> 00:49:45,480

therefore thereby placing it in the

1130

00:49:50,809 --> 00:49:48,660

subtropical Zone and so yes based on the

1131

00:49:54,950 --> 00:49:50,819

animal data

1132

00:49:58,550 --> 00:49:54,960

that's in the uh and the dated um uh and

1133

00:50:01,130 --> 00:49:58,560

the dating that uh Mark used the uh the

1134

00:50:03,530 --> 00:50:01,140

uh

1135

00:50:06,609 --> 00:50:03,540

these the cave that that particular cave

1136

00:50:09,530 --> 00:50:06,619

joint mittner was dated to be uh the

1137

00:50:13,309 --> 00:50:09,540

bosses in that camera are did to be a

1138

00:50:16,190 --> 00:50:13,319

hundred thousand 130 000 plus years ago

1139

00:50:17,690 --> 00:50:16,200

um and so yes at that time Britain was

1140

00:50:22,130 --> 00:50:17,700

pretty close to the equator a lot closer

1141

00:50:25,849 --> 00:50:24,589

I do

1142

00:50:31,550 --> 00:50:25,859

um

1143

00:50:35,270 --> 00:50:31,560

much specifically about the details of a

1144

00:50:37,609 --> 00:50:35,280

particular aspect of your uh talk but it

1145

00:50:40,670 --> 00:50:37,619

a broader question and that is all is of

1146

00:50:42,589 --> 00:50:40,680

interest to me on these talks where the

1147

00:50:45,589 --> 00:50:42,599

society for scientific exploration and

1148

00:50:47,150 --> 00:50:45,599

we often have speakers talking about

1149

00:50:49,849 --> 00:50:47,160

things that are anomalous in terms of

1150

00:50:52,030 --> 00:50:49,859

mainstream science so I guess my

1151  
00:50:53,930 --> 00:50:52,040  
question for you is uh what if any

1152  
00:50:55,549 --> 00:50:53,940  
response have you had from the

1153  
00:50:57,829 --> 00:50:55,559  
mainstream scientists you talk about

1154  
00:51:01,130 --> 00:50:57,839  
interest in maybe

1155  
00:51:02,809 --> 00:51:01,140  
um encouraging uh geologists to

1156  
00:51:05,930 --> 00:51:02,819  
geoscientists to take a look at this

1157  
00:51:09,170 --> 00:51:05,940  
have you had any response or and if so

1158  
00:51:11,450 --> 00:51:09,180  
what what is your primary critique of

1159  
00:51:14,329 --> 00:51:11,460  
why they think this may not be an

1160  
00:51:15,710 --> 00:51:14,339  
appropriate model

1161  
00:51:19,010 --> 00:51:15,720  
well

1162  
00:51:20,870 --> 00:51:19,020  
it for the most part it's been crickets

1163  
00:51:25,089 --> 00:51:20,880

uh I'll be honest

1164

00:51:28,670 --> 00:51:25,099

um but I have had a few um a few emails

1165

00:51:29,450 --> 00:51:28,680

uh through like researchgate and and

1166

00:51:30,770 --> 00:51:29,460

um

1167

00:51:33,770 --> 00:51:30,780

I don't think anything's come through

1168

00:51:36,530 --> 00:51:33,780

the Journal of scientific exploration uh

1169

00:51:39,170 --> 00:51:36,540

that I'm aware but um

1170

00:51:42,049 --> 00:51:39,180

uh one actually one physicist up in

1171

00:51:45,109 --> 00:51:42,059

Canada uh pointed me to a paper that he

1172

00:51:46,670 --> 00:51:45,119

had written a few years back doing the

1173

00:51:49,730 --> 00:51:46,680

mathematics of

1174

00:51:52,430 --> 00:51:49,740

of whether it was possible for an

1175

00:51:55,069 --> 00:51:52,440

asteroid hitting Earth obliquely to

1176

00:51:58,130 --> 00:51:55,079

displace the crust and you know what the

1177

00:52:00,950 --> 00:51:58,140

uh what the effect of that would be so

1178

00:52:02,990 --> 00:52:00,960

he actually did a you know first order

1179

00:52:04,370 --> 00:52:03,000

back of the envelope a little bit more

1180

00:52:06,230 --> 00:52:04,380

detail than that

1181

00:52:08,150 --> 00:52:06,240

but uh you know looking at sort of

1182

00:52:10,910 --> 00:52:08,160

what's how much what's the weight of the

1183

00:52:13,730 --> 00:52:10,920

crust how much force would be in this uh

1184

00:52:15,230 --> 00:52:13,740

imparted by the asteroid and what you

1185

00:52:16,970 --> 00:52:15,240

know how would it move would it move the

1186

00:52:18,349 --> 00:52:16,980

crust how far would it move it how long

1187

00:52:20,210 --> 00:52:18,359

you know what would the time constants

1188

00:52:23,210 --> 00:52:20,220

be so

1189

00:52:24,710 --> 00:52:23,220

um this paper and I and I uh I don't

1190

00:52:27,650 --> 00:52:24,720

have it at my fingertips I probably

1191

00:52:29,270 --> 00:52:27,660

should have grabbed it uh to cite it but

1192

00:52:31,370 --> 00:52:29,280

um and it's not signed into my paper

1193

00:52:33,950 --> 00:52:31,380

because I wasn't aware of it

1194

00:52:37,250 --> 00:52:33,960

um is is exactly I think the next step

1195

00:52:40,549 --> 00:52:37,260

that uh needs to be taken to sort of

1196

00:52:42,589 --> 00:52:40,559

at least establish plausibility right

1197

00:52:44,690 --> 00:52:42,599

um that's all we can really do because

1198

00:52:46,549 --> 00:52:44,700

uh you know it's these are these are

1199

00:52:48,770 --> 00:52:46,559

like you kind of when you're a

1200

00:52:51,829 --> 00:52:48,780

generalist uh there's this is the danger

1201  
00:52:54,230 --> 00:52:51,839  
of you know oversimplifying but if

1202  
00:52:57,290 --> 00:52:54,240  
you're if you're an expert in your

1203  
00:52:58,670 --> 00:52:57,300  
particular area of expertise you're

1204  
00:53:01,430 --> 00:52:58,680  
generally not going to venture outside

1205  
00:53:03,230 --> 00:53:01,440  
of that so it's it's it's a very it's a

1206  
00:53:05,630 --> 00:53:03,240  
challenging um

1207  
00:53:07,370 --> 00:53:05,640  
challenging challenging situation so I

1208  
00:53:09,349 --> 00:53:07,380  
think like I said I sort of put it out

1209  
00:53:13,790 --> 00:53:09,359  
there as this is the first step in

1210  
00:53:17,030 --> 00:53:13,800  
suggesting uh Direction ago and uh you

1211  
00:53:19,010 --> 00:53:17,040  
know uh I I've had some in history to

1212  
00:53:21,109 --> 00:53:19,020  
your question mark I've had a little bit

1213  
00:53:23,450 --> 00:53:21,119

of feedback nothing nothing negative

1214

00:53:25,790 --> 00:53:23,460

because you know at the end of the paper

1215

00:53:27,049 --> 00:53:25,800

I really do say hey look I know there's

1216

00:53:30,049 --> 00:53:27,059

been a number of problems with this

1217

00:53:32,150 --> 00:53:30,059

let's go through them and uh you know

1218

00:53:33,950 --> 00:53:32,160

and I and I think they can be pretty

1219

00:53:36,530 --> 00:53:33,960

much uh discounted

1220

00:53:38,450 --> 00:53:36,540

um unless you're a die-hard if you're a

1221

00:53:39,770 --> 00:53:38,460

die-hard skeptic

1222

00:53:41,809 --> 00:53:39,780

um you're always going to find something

1223

00:53:43,549 --> 00:53:41,819

but if you're open-minded I think

1224

00:53:44,990 --> 00:53:43,559

there's enough here to say hey look

1225

00:53:46,790 --> 00:53:45,000

there there might actually be a

1226  
00:53:49,910 --> 00:53:46,800  
possibility and let's see if we can take

1227  
00:53:52,549 --> 00:53:49,920  
it a a step further so it's kind of

1228  
00:53:55,670 --> 00:53:52,559  
where I feel you know I'm at right now

1229  
00:53:57,170 --> 00:53:55,680  
well then you're not I mean at least as

1230  
00:53:59,390 --> 00:53:57,180  
you've presented it here you're looking

1231  
00:54:00,829 --> 00:53:59,400  
you're trying to hypothesize potential

1232  
00:54:03,349 --> 00:54:00,839  
mechanisms

1233  
00:54:05,750 --> 00:54:03,359  
you're not necessarily proposing that

1234  
00:54:07,609 --> 00:54:05,760  
to invalidate existing you know now that

1235  
00:54:09,770 --> 00:54:07,619  
Einstein is wrong kind of a thing here

1236  
00:54:11,930 --> 00:54:09,780  
right you're you're trying to find

1237  
00:54:15,470 --> 00:54:11,940  
existing mechanisms that would be

1238  
00:54:17,030 --> 00:54:15,480

consistent with known uh models in

1239

00:54:18,710 --> 00:54:17,040

science that you're just trying to put

1240

00:54:20,870 --> 00:54:18,720

them together in ways that might explain

1241

00:54:21,890 --> 00:54:20,880

these data at least as I'm seeing what

1242

00:54:25,250 --> 00:54:21,900

you're talking yeah

1243

00:54:26,750 --> 00:54:25,260

well like you know the uh in the in the

1244

00:54:28,370 --> 00:54:26,760

appendix of the paper actually compute

1245

00:54:31,730 --> 00:54:28,380

the moments of inertia with and without

1246

00:54:32,870 --> 00:54:31,740

ice I I I I alluded to that in the in

1247

00:54:35,030 --> 00:54:32,880

the talk

1248

00:54:37,430 --> 00:54:35,040

and the math and all the details on how

1249

00:54:40,970 --> 00:54:37,440

I did that uh and it's you know it's

1250

00:54:42,890 --> 00:54:40,980

it's it's a it's a standard model uh

1251

00:54:46,130 --> 00:54:42,900

uh that's used and you know so I did you

1252

00:54:47,930 --> 00:54:46,140

know the finite element uh uh

1253

00:54:50,210 --> 00:54:47,940

calculations

1254

00:54:52,490 --> 00:54:50,220

and so forth then and actually the you

1255

00:54:54,410 --> 00:54:52,500

know what what I was able to show is

1256

00:54:56,870 --> 00:54:54,420

that the effect of the eyes

1257

00:54:58,790 --> 00:54:56,880

um is very small and so it really does

1258

00:54:59,870 --> 00:54:58,800

validate Einstein's

1259

00:55:02,690 --> 00:54:59,880

um

1260

00:55:05,030 --> 00:55:02,700

his his feelings at the time which I'm

1261

00:55:07,430 --> 00:55:05,040

sure he he had you know he knew roughly

1262

00:55:08,870 --> 00:55:07,440

with the mass of the Earth was and how

1263

00:55:11,990 --> 00:55:08,880

much ice would be involved and he

1264

00:55:14,750 --> 00:55:12,000

obviously did his his calculations and

1265

00:55:17,690 --> 00:55:14,760

so you know I I think uh using a little

1266

00:55:20,270 --> 00:55:17,700

bit more uh detailed model

1267

00:55:22,730 --> 00:55:20,280

um and uh and running the the

1268

00:55:25,670 --> 00:55:22,740

calculation through finding only at you

1269

00:55:27,950 --> 00:55:25,680

know 20 to 20 kilometer shift uh in the

1270

00:55:30,829 --> 00:55:27,960

theoretical rotational axis sort of says

1271

00:55:32,270 --> 00:55:30,839

yeah Einstein was right however

1272

00:55:34,549 --> 00:55:32,280

um he was talking about the crust being

1273

00:55:37,250 --> 00:55:34,559

locked to the mantle you know you know

1274

00:55:40,609 --> 00:55:37,260

floating on the on the um on this

1275

00:55:42,710 --> 00:55:40,619

plastic sort of layer uh between the

1276

00:55:45,049 --> 00:55:42,720

hard crust and the molten uh and the

1277

00:55:49,430 --> 00:55:45,059

molten core and um

1278

00:55:52,309 --> 00:55:49,440

what I'm proposing here is that by uh

1279

00:55:55,549 --> 00:55:52,319

with the geomagnetic reversal and having

1280

00:55:56,990 --> 00:55:55,559

this magnetic flip it might actually by

1281

00:55:59,270 --> 00:55:57,000

reducing the friction it's actually

1282

00:56:00,710 --> 00:55:59,280

changing the the rules of the game a

1283

00:56:02,030 --> 00:56:00,720

little bit and so it's a it's a

1284

00:56:04,670 --> 00:56:02,040

different problem than Einstein was

1285

00:56:07,790 --> 00:56:04,680

thinking about it's uh it's uh it's it's

1286

00:56:10,730 --> 00:56:07,800

the crossover on a very slippery mantle

1287

00:56:12,890 --> 00:56:10,740

and so okay so now how do you what are

1288

00:56:16,010 --> 00:56:12,900

the calculations now and forget about

1289

00:56:18,049 --> 00:56:16,020

the ice let's let's think about the moon

1290

00:56:19,910 --> 00:56:18,059

now because the moon obviously has an

1291

00:56:22,250 --> 00:56:19,920

effect on the tides

1292

00:56:24,890 --> 00:56:22,260

and I mean it's it's it's remarkable the

1293

00:56:27,349 --> 00:56:24,900

extent to which the moon moves water on

1294

00:56:30,170 --> 00:56:27,359

this planet so why not the crust if it

1295

00:56:32,270 --> 00:56:30,180

could move why not the crust

1296

00:56:33,950 --> 00:56:32,280

um so I think these are all within the

1297

00:56:36,290 --> 00:56:33,960

realm of possibility

1298

00:56:39,890 --> 00:56:36,300

under under the right you know the right

1299

00:56:41,870 --> 00:56:39,900

conditions sure sure

1300

00:56:44,210 --> 00:56:41,880

all right I'd like to

1301  
00:56:45,290 --> 00:56:44,220  
invite we have about three more minutes

1302  
00:56:47,750 --> 00:56:45,300  
left

1303  
00:56:49,670 --> 00:56:47,760  
um I see no more questions in the Q a if

1304  
00:56:51,890 --> 00:56:49,680  
someone has a question that's burning

1305  
00:56:55,010 --> 00:56:51,900  
please type it in quickly here and we'll

1306  
00:56:57,710 --> 00:56:55,020  
ask Mark to answer it and we'll give

1307  
00:57:00,650 --> 00:56:57,720  
another 30 seconds or so

1308  
00:57:03,710 --> 00:57:00,660  
um before uh to see if anyone has any

1309  
00:57:05,329 --> 00:57:03,720  
additional questions and then um at the

1310  
00:57:07,430 --> 00:57:05,339  
end of this session when we end the

1311  
00:57:09,230 --> 00:57:07,440  
session then we'll be going back out

1312  
00:57:11,690 --> 00:57:09,240  
into the social lounge and will you be

1313  
00:57:13,490 --> 00:57:11,700

able to join uh one of the tables so

1314

00:57:15,410 --> 00:57:13,500

that people can have a face-to-face

1315

00:57:19,670 --> 00:57:15,420

conversation with you then sure happy to

1316

00:57:25,130 --> 00:57:22,430

all right well it's I'm not seeing any

1317

00:57:26,569 --> 00:57:25,140

other questions so

1318

00:57:29,809 --> 00:57:26,579

um with that I'd like to thank you very

1319

00:57:32,089 --> 00:57:29,819

much for a very interesting talk and

1320

00:57:33,530 --> 00:57:32,099

um we'll end the session and I see

1321

00:57:35,569 --> 00:57:33,540

several people are applauding virtually

1322

00:57:37,790 --> 00:57:35,579

and we'll allow them to talk to you in