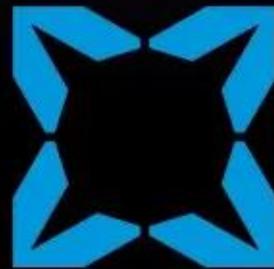


# SSE COMMUNITY DISCUSSION HOUR

## **WEAK SIGNAL PROPAGATION REPORTER: IMPLICATIONS FOR ANOMALIES RESEARCH**



**SOCIETY  
FOR  
SCIENTIFIC  
EXPLORATION**

1  
00:00:09,110 --> 00:00:07,349  
okay i'm doug richards uh if anybody

2  
00:00:12,150 --> 00:00:09,120  
wants to email me my email address is

3  
00:00:14,390 --> 00:00:12,160  
there doug.richards cox.net i'm going to

4  
00:00:16,310 --> 00:00:14,400  
be talking about weak signal propagation

5  
00:00:18,550 --> 00:00:16,320  
reporter known as whisper and its

6  
00:00:19,429 --> 00:00:18,560  
implications for anomalies research

7  
00:00:21,429 --> 00:00:19,439  
now

8  
00:00:24,150 --> 00:00:21,439  
this is something that most people who

9  
00:00:26,070 --> 00:00:24,160  
do it just think of as a way to measure

10  
00:00:28,070 --> 00:00:26,080  
radio propagation and i'll explain a

11  
00:00:29,029 --> 00:00:28,080  
little about what that is and then i

12  
00:00:30,470 --> 00:00:29,039  
will

13  
00:00:32,790 --> 00:00:30,480

talk a little bit about how this might

14

00:00:33,990 --> 00:00:32,800

be useful for some anomalies research

15

00:00:35,990 --> 00:00:34,000

because it turns out there's a lot of

16

00:00:38,389 --> 00:00:36,000

overlap in things that you might want to

17

00:00:40,150 --> 00:00:38,399

measure with it and it also offers some

18

00:00:42,229 --> 00:00:40,160

lessons as to

19

00:00:45,990 --> 00:00:42,239

how anomalies could be approached what

20

00:00:50,790 --> 00:00:48,069

is some examples of maps generated by

21

00:00:52,389 --> 00:00:50,800

whisper the one on the left

22

00:00:54,709 --> 00:00:52,399

is a station

23

00:00:57,430 --> 00:00:54,719

at an antarctic research station

24

00:01:00,389 --> 00:00:57,440

and it's all the signals that

25

00:01:02,470 --> 00:01:00,399

are or stations actually receiving him

26

00:01:04,390 --> 00:01:02,480

at a particular moment in time the one

27

00:01:06,149 --> 00:01:04,400

on the right is an example from a couple

28

00:01:07,910 --> 00:01:06,159

days ago of all the stations receiving

29

00:01:09,590 --> 00:01:07,920

me during a

30

00:01:11,350 --> 00:01:09,600

one hour period

31

00:01:13,109 --> 00:01:11,360

so on we go

32

00:01:15,190 --> 00:01:13,119

so what is the weak signal propagation

33

00:01:16,870 --> 00:01:15,200

reporter well it's a signal processing

34

00:01:19,190 --> 00:01:16,880

algorithm for extremely weak radio

35

00:01:21,670 --> 00:01:19,200

signals and there are hundreds of

36

00:01:24,070 --> 00:01:21,680

stations worldwide uploading to this uh

37

00:01:27,030 --> 00:01:24,080

whispernet database and anyone can

38

00:01:28,310 --> 00:01:27,040

download and so i'll explain later that

39

00:01:30,789 --> 00:01:28,320

you don't have to be a ham radio

40

00:01:33,190 --> 00:01:30,799

operator to use the database you do have

41

00:01:34,710 --> 00:01:33,200

to be a ham radio operator to transmit

42

00:01:36,630 --> 00:01:34,720

but you can either use a receiver or

43

00:01:38,950 --> 00:01:36,640

just the internet in order to receive

44

00:01:40,469 --> 00:01:38,960

the database and so this slide here is

45

00:01:41,510 --> 00:01:40,479

an example

46

00:01:43,590 --> 00:01:41,520

of one of the things that you can

47

00:01:45,830 --> 00:01:43,600

download which is a map for any

48

00:01:47,910 --> 00:01:45,840

particular time period of people that

49

00:01:50,069 --> 00:01:47,920

have heard anyone from anywhere and in

50

00:01:51,670 --> 00:01:50,079

this particular one

51  
00:01:53,510 --> 00:01:51,680  
you can't see me in there but i'm in

52  
00:01:54,710 --> 00:01:53,520  
virginia beach and these are people that

53  
00:01:56,389 --> 00:01:54,720  
heard me

54  
00:01:58,069 --> 00:01:56,399  
in a two-hour interval i'm sorry a

55  
00:02:00,230 --> 00:01:58,079  
one-hour interval a couple days ago so

56  
00:02:01,510 --> 00:02:00,240  
it ranges from all the way down in

57  
00:02:04,789 --> 00:02:01,520  
australia

58  
00:02:07,109 --> 00:02:04,799  
to brazil to south africa to germany to

59  
00:02:09,270 --> 00:02:07,119  
the canary islands costa rica

60  
00:02:12,150 --> 00:02:09,280  
alaska and all over the united states

61  
00:02:13,830 --> 00:02:12,160  
and so you can use this to measure how

62  
00:02:16,070 --> 00:02:13,840  
well radio signals are propagating to

63  
00:02:18,550 --> 00:02:16,080

any of these locations and that's its

64

00:02:20,470 --> 00:02:18,560

designed purpose so that radio operators

65

00:02:22,630 --> 00:02:20,480

can see for example

66

00:02:24,630 --> 00:02:22,640

yes i have a good path to hawaii right

67

00:02:29,030 --> 00:02:24,640

now or a good path to australia if i

68

00:02:32,869 --> 00:02:31,670

now that's what it's for for radio

69

00:02:35,430 --> 00:02:32,879

question is why is it relevant to

70

00:02:37,910 --> 00:02:35,440

anomalies research well much anomalies

71

00:02:39,830 --> 00:02:37,920

research also tries to detect very weak

72

00:02:43,270 --> 00:02:39,840

signals uh

73

00:02:45,190 --> 00:02:43,280

the whole basis of research into psy is

74

00:02:47,589 --> 00:02:45,200

figuring out statistical ways of taking

75

00:02:49,270 --> 00:02:47,599

an incredibly weak effect and bringing

76

00:02:52,470 --> 00:02:49,280

it up to the point where we can identify

77

00:02:54,070 --> 00:02:52,480

that there's actually something there

78

00:02:55,910 --> 00:02:54,080

some of the global consciousness work i

79

00:02:57,110 --> 00:02:55,920

saw roger nelson give a presentation

80

00:02:59,270 --> 00:02:57,120

last week

81

00:03:01,270 --> 00:02:59,280

and they too have these random number

82

00:03:03,670 --> 00:03:01,280

generators all over the world and the

83

00:03:05,509 --> 00:03:03,680

idea is to use a statistical method to

84

00:03:08,470 --> 00:03:05,519

bring out of this

85

00:03:09,910 --> 00:03:08,480

very very noisy data a signal that shows

86

00:03:11,270 --> 00:03:09,920

that random number generators are

87

00:03:14,309 --> 00:03:11,280

reacting to

88

00:03:16,869 --> 00:03:14,319

various events in the world

89

00:03:19,030 --> 00:03:16,879

another thing that happens is

90

00:03:21,910 --> 00:03:19,040

there's been research looking at effects

91

00:03:22,790 --> 00:03:21,920

of the geomagnetic field on things like

92

00:03:25,509 --> 00:03:22,800

psi

93

00:03:26,949 --> 00:03:25,519

heart rate variability um

94

00:03:28,550 --> 00:03:26,959

all sorts of other physiological

95

00:03:29,830 --> 00:03:28,560

variables that were thought to really

96

00:03:32,550 --> 00:03:29,840

not have anything at all to do with the

97

00:03:34,869 --> 00:03:32,560

earth geomagnetic field and so

98

00:03:37,430 --> 00:03:34,879

again you have very weak signals there

99

00:03:39,990 --> 00:03:37,440

and connections to geomagnetic variables

100

00:03:42,070 --> 00:03:40,000

which is what radio has too

101  
00:03:43,990 --> 00:03:42,080  
so there's really quite a bit of overlap

102  
00:03:45,509 --> 00:03:44,000  
in terms of what they're trying to

103  
00:03:47,750 --> 00:03:45,519  
accomplish with whisper with radio

104  
00:03:49,990 --> 00:03:47,760  
signals

105  
00:03:52,550 --> 00:03:50,000  
that are affected by geomagnetic fields

106  
00:03:54,550 --> 00:03:52,560  
and what's being accomplished with a lot

107  
00:03:56,229 --> 00:03:54,560  
of anomalies research

108  
00:03:57,990 --> 00:03:56,239  
now there's a couple things you can do

109  
00:03:59,509 --> 00:03:58,000  
with whisper one is you can actually

110  
00:04:01,589 --> 00:03:59,519  
apply it directly to studies of the

111  
00:04:03,670 --> 00:04:01,599  
effects of the geomagnetic field and

112  
00:04:05,270 --> 00:04:03,680  
ionospheric resonances on biological

113  
00:04:06,710 --> 00:04:05,280

systems and i'll talk a little about

114

00:04:08,949 --> 00:04:06,720

what that would be later

115

00:04:11,429 --> 00:04:08,959

for example uh looking at psi looking at

116

00:04:12,630 --> 00:04:11,439

heart rate variability in relation to

117

00:04:14,390 --> 00:04:12,640

say

118

00:04:15,750 --> 00:04:14,400

a solar storm and what that does to our

119

00:04:17,590 --> 00:04:15,760

ionosphere

120

00:04:19,270 --> 00:04:17,600

and also uh it can provide useful

121

00:04:21,430 --> 00:04:19,280

methodological comparisons to other

122

00:04:23,909 --> 00:04:21,440

studies of very weak signals uh for

123

00:04:25,590 --> 00:04:23,919

example detection of synchronization of

124

00:04:27,990 --> 00:04:25,600

global consciousness detected by random

125

00:04:29,990 --> 00:04:28,000

number generators all over the world

126  
00:04:31,990 --> 00:04:30,000  
some of the methods used for that could

127  
00:04:33,590 --> 00:04:32,000  
be applied to having whisper receivers

128  
00:04:35,430 --> 00:04:33,600  
all over the world trying to pick up

129  
00:04:37,430 --> 00:04:35,440  
signals so

130  
00:04:40,230 --> 00:04:37,440  
there ends up being some potential

131  
00:04:41,830 --> 00:04:40,240  
overlap here not saying that

132  
00:04:44,230 --> 00:04:41,840  
something like psy or global

133  
00:04:45,670 --> 00:04:44,240  
consciousness is based on radio signals

134  
00:04:47,030 --> 00:04:45,680  
but you've got a number of the same

135  
00:04:49,430 --> 00:04:47,040  
issues and it looks like some of the

136  
00:04:50,390 --> 00:04:49,440  
same variables such as the geomagnetic

137  
00:04:52,950 --> 00:04:50,400  
effects

138  
00:04:54,150 --> 00:04:52,960

may be relevant to both radio and some

139

00:04:58,550 --> 00:04:54,160

of these more anomalous kinds of

140

00:05:03,029 --> 00:05:01,430

so a little bit about radio signals uh

141

00:05:05,990 --> 00:05:03,039

in the earlier conversations that we

142

00:05:10,390 --> 00:05:08,950

there were some people there who have

143

00:05:12,230 --> 00:05:10,400

some experience with this and actually

144

00:05:13,430 --> 00:05:12,240

also have ham radio licenses like i do

145

00:05:15,830 --> 00:05:13,440

but some of you have probably never

146

00:05:17,990 --> 00:05:15,840

heard of this before and so the idea is

147

00:05:19,830 --> 00:05:18,000

that uh for some radio signals for

148

00:05:21,430 --> 00:05:19,840

example your cell phone it has to be

149

00:05:22,710 --> 00:05:21,440

within line of sight of a cell phone

150

00:05:24,790 --> 00:05:22,720

tower and if you're out of line inside

151  
00:05:25,909 --> 00:05:24,800  
of the cell phone tower there's no radio

152  
00:05:27,990 --> 00:05:25,919  
signal

153  
00:05:30,629 --> 00:05:28,000  
but for other frequencies uh the

154  
00:05:32,390 --> 00:05:30,639  
frequencies go from the transmitter up

155  
00:05:33,670 --> 00:05:32,400  
to the ionosphere a couple hundred miles

156  
00:05:36,390 --> 00:05:33,680  
up in the atmosphere where there are

157  
00:05:38,070 --> 00:05:36,400  
ions and the ions bounce radio signals

158  
00:05:39,430 --> 00:05:38,080  
back to the earth then they bounce back

159  
00:05:40,310 --> 00:05:39,440  
up to the ionosphere and then back to

160  
00:05:41,990 --> 00:05:40,320  
the earth

161  
00:05:42,870 --> 00:05:42,000  
and sometimes they can make multiple

162  
00:05:44,310 --> 00:05:42,880  
hops

163  
00:05:45,830 --> 00:05:44,320

and go

164

00:05:47,749 --> 00:05:45,840

actually not only halfway around the

165

00:05:49,270 --> 00:05:47,759

world but all the way around the world

166

00:05:51,270 --> 00:05:49,280

so you can sometimes hear an echo of

167

00:05:53,510 --> 00:05:51,280

your own signal

168

00:05:55,029 --> 00:05:53,520

a few seconds later from having traveled

169

00:05:57,430 --> 00:05:55,039

around the world

170

00:05:59,749 --> 00:05:57,440

now this varies an enormous amount in

171

00:06:01,830 --> 00:05:59,759

terms of what signals can go where at

172

00:06:03,830 --> 00:06:01,840

what times and so the whole purpose of

173

00:06:06,070 --> 00:06:03,840

whisper was to be able to measure this

174

00:06:07,990 --> 00:06:06,080

with a big worldwide network so you'd be

175

00:06:09,110 --> 00:06:08,000

able to figure out ah this would be a

176

00:06:11,110 --> 00:06:09,120

good time

177

00:06:13,990 --> 00:06:11,120

say i want to talk to hawaii or

178

00:06:16,070 --> 00:06:14,000

antarctica that i would be using my

179

00:06:17,990 --> 00:06:16,080

radio on a particular frequency

180

00:06:20,950 --> 00:06:18,000

and you'd use whisper to measure whether

181

00:06:22,390 --> 00:06:20,960

this was a possible thing to do now one

182

00:06:24,550 --> 00:06:22,400

of the major things that affects the

183

00:06:27,270 --> 00:06:24,560

ionosphere and affects the ability of

184

00:06:28,870 --> 00:06:27,280

all this to work is solar radiation

185

00:06:30,950 --> 00:06:28,880

and solar radiation i'm not going to get

186

00:06:33,430 --> 00:06:30,960

into any of the details of

187

00:06:35,590 --> 00:06:33,440

how the sun works today that gets into a

188

00:06:37,430 --> 00:06:35,600

whole complicated area but the idea is

189

00:06:39,590 --> 00:06:37,440

that it affects the ionosphere and can

190

00:06:41,510 --> 00:06:39,600

produce geomagnetic storms and that

191

00:06:43,510 --> 00:06:41,520

changes radio propagation

192

00:06:45,990 --> 00:06:43,520

now that's been known for a long time

193

00:06:47,830 --> 00:06:46,000

but more recently it's been discovered

194

00:06:50,070 --> 00:06:47,840

that if you look at the measures of

195

00:06:52,790 --> 00:06:50,080

geomagnetic storms you also see

196

00:06:54,790 --> 00:06:52,800

correlations with um psi functioning for

197

00:06:57,110 --> 00:06:54,800

example the dream telepathy experiments

198

00:06:58,629 --> 00:06:57,120

of stan kripner and various aspects of

199

00:07:00,790 --> 00:06:58,639

human physiology like heart rate

200

00:07:03,029 --> 00:07:00,800

variability so it looks like some of the

201

00:07:05,589 --> 00:07:03,039

same factors are affecting

202

00:07:07,110 --> 00:07:05,599

not only radio signals but are affecting

203

00:07:09,110 --> 00:07:07,120

some of the more anomalous phenomena

204

00:07:11,029 --> 00:07:09,120

that we want to look at and so a system

205

00:07:13,350 --> 00:07:11,039

that can measure what's going on might

206

00:07:18,230 --> 00:07:13,360

be quite useful for anomalies research

207

00:07:21,990 --> 00:07:19,589

so

208

00:07:22,950 --> 00:07:22,000

how does whisper work well the challenge

209

00:07:24,390 --> 00:07:22,960

is

210

00:07:26,790 --> 00:07:24,400

you've got some very low and

211

00:07:28,950 --> 00:07:26,800

uncontrollable signature to noise ratios

212

00:07:30,390 --> 00:07:28,960

and long distance radio communication

213

00:07:32,230 --> 00:07:30,400

now that's in contrast to lab

214

00:07:33,749 --> 00:07:32,240

experiments

215

00:07:35,589 --> 00:07:33,759

where the signals noise ratios are

216

00:07:36,790 --> 00:07:35,599

higher they can be controlled but it's

217

00:07:39,749 --> 00:07:36,800

very similar to issues in sci

218

00:07:44,790 --> 00:07:42,309

so what a physicist will do is do a lot

219

00:07:47,189 --> 00:07:44,800

of work to eliminate all sources of

220

00:07:49,430 --> 00:07:47,199

noise the trouble with the real world is

221

00:07:50,950 --> 00:07:49,440

that you can't do that and so radio is a

222

00:07:53,670 --> 00:07:50,960

great example where you're basically

223

00:07:55,029 --> 00:07:53,680

stuck with whatever kind of noise is out

224

00:07:56,070 --> 00:07:55,039

there

225

00:07:59,589 --> 00:07:56,080

and

226

00:08:02,150 --> 00:07:59,599

you have to somehow deal with that noise

227

00:08:03,830 --> 00:08:02,160

and the solution for radio was developed

228

00:08:05,589 --> 00:08:03,840

by a physicist named joe taylor at

229

00:08:07,990 --> 00:08:05,599

princeton university he won the nobel

230

00:08:10,070 --> 00:08:08,000

prize and is a radio astronomer and a

231

00:08:11,909 --> 00:08:10,080

physicist and what he uses is something

232

00:08:13,990 --> 00:08:11,919

called forward error correction and

233

00:08:16,070 --> 00:08:14,000

other signal processing techniques to

234

00:08:18,309 --> 00:08:16,080

make possible decoding of signals about

235

00:08:20,070 --> 00:08:18,319

negative 31 decibels below the noise

236

00:08:21,830 --> 00:08:20,080

level now for those who aren't engineers

237

00:08:24,790 --> 00:08:21,840

that may sound meaningless but it's

238

00:08:27,350 --> 00:08:24,800

basically what allows you to have

239

00:08:28,550 --> 00:08:27,360

error-free internet communication and a

240

00:08:31,350 --> 00:08:28,560

lot of other sort cell phone

241

00:08:32,790 --> 00:08:31,360

communication the difference is

242

00:08:35,029 --> 00:08:32,800

that your

243

00:08:36,949 --> 00:08:35,039

internet and cell phone communication

244

00:08:39,269 --> 00:08:36,959

still have to have a pretty low noise

245

00:08:41,029 --> 00:08:39,279

level to work whereas what taylor did is

246

00:08:44,070 --> 00:08:41,039

he came up with a system

247

00:08:46,230 --> 00:08:44,080

which by using fairly long blocks of

248

00:08:48,790 --> 00:08:46,240

signals and a number of other signal

249

00:08:51,509 --> 00:08:48,800

processing processing techniques made it

250

00:08:53,670 --> 00:08:51,519

possible to actually decode signals that

251  
00:08:55,590 --> 00:08:53,680  
are so far below the noise that if you

252  
00:08:57,590 --> 00:08:55,600  
listen to them on the radio all you hear

253  
00:08:59,590 --> 00:08:57,600  
is noise there's just absolutely nothing

254  
00:09:02,150 --> 00:08:59,600  
there as far as you can tell

255  
00:09:03,910 --> 00:09:02,160  
but by this various types of signal

256  
00:09:06,389 --> 00:09:03,920  
processing it's able to actually pull

257  
00:09:07,269 --> 00:09:06,399  
the signal up out of the noise

258  
00:09:08,790 --> 00:09:07,279  
so

259  
00:09:10,470 --> 00:09:08,800  
what he then did is he released his

260  
00:09:11,910 --> 00:09:10,480  
software for free

261  
00:09:13,990 --> 00:09:11,920  
and

262  
00:09:15,990 --> 00:09:14,000  
you can download it on your computer

263  
00:09:18,470 --> 00:09:16,000

and this uses the regular ham radio

264

00:09:20,790 --> 00:09:18,480

bands a very very tiny section of each

265

00:09:23,829 --> 00:09:20,800

ham radio band and ham stations around

266

00:09:26,310 --> 00:09:23,839

the world transmit and receive signals

267

00:09:28,150 --> 00:09:26,320

and when they spot signals of received

268

00:09:29,590 --> 00:09:28,160

signals they then upload them on the

269

00:09:32,790 --> 00:09:29,600

internet to what's called whispernet

270

00:09:37,030 --> 00:09:34,150

and then whispering that data can be

271

00:09:38,470 --> 00:09:37,040

downloaded and analyzed by anyone

272

00:09:40,389 --> 00:09:38,480

so this is not just something that ham

273

00:09:42,230 --> 00:09:40,399

radio operators can use but it's

274

00:09:43,670 --> 00:09:42,240

something that anyone can use

275

00:09:45,269 --> 00:09:43,680

and

276

00:09:48,230 --> 00:09:45,279

there's actually a group now based out

277

00:09:49,190 --> 00:09:48,240

of the university of scranton

278

00:09:51,509 --> 00:09:49,200

where

279

00:09:53,190 --> 00:09:51,519

uh one fellow did his dissertation

280

00:09:56,630 --> 00:09:53,200

looking at

281

00:09:58,550 --> 00:09:56,640

thousands of uh of data points and

282

00:10:00,550 --> 00:09:58,560

seeing how whisper responded to various

283

00:10:02,790 --> 00:10:00,560

kinds of solar storms

284

00:10:03,590 --> 00:10:02,800

so anyone can download the data

285

00:10:05,350 --> 00:10:03,600

so

286

00:10:07,750 --> 00:10:05,360

what's this for well as i said the

287

00:10:10,710 --> 00:10:07,760

intended application of whisper

288

00:10:12,230 --> 00:10:10,720

is to explore effects of uh

289

00:10:14,230 --> 00:10:12,240

these various phenomena on radio

290

00:10:15,910 --> 00:10:14,240

propagation so for example one of the

291

00:10:18,230 --> 00:10:15,920

major things that affects radio

292

00:10:19,910 --> 00:10:18,240

propagation is geomagnetic field

293

00:10:21,910 --> 00:10:19,920

variability

294

00:10:23,750 --> 00:10:21,920

and classically the idea is that when

295

00:10:25,990 --> 00:10:23,760

you have a geomagnetic storm

296

00:10:27,750 --> 00:10:26,000

radio propagation gets very badly messed

297

00:10:29,990 --> 00:10:27,760

up well it turns out and i've been

298

00:10:32,870 --> 00:10:30,000

running whisper 24 hours a day for about

299

00:10:34,870 --> 00:10:32,880

a year to get a good baseline

300

00:10:36,710 --> 00:10:34,880

that's not necessarily true sometimes

301  
00:10:38,710 --> 00:10:36,720  
you actually get enhanced propagation in

302  
00:10:40,389 --> 00:10:38,720  
a geomagnetic storm in the middle of the

303  
00:10:41,829 --> 00:10:40,399  
night when there's nobody on except for

304  
00:10:43,350 --> 00:10:41,839  
the people who keep their whisper

305  
00:10:44,949 --> 00:10:43,360  
transmitters running and so you'll find

306  
00:10:46,150 --> 00:10:44,959  
that at three in the morning all of a

307  
00:10:51,590 --> 00:10:46,160  
sudden

308  
00:10:53,829 --> 00:10:51,600  
some very good uh

309  
00:10:54,949 --> 00:10:53,839  
reception all the way down in antarctica

310  
00:10:56,630 --> 00:10:54,959  
and so some of these are very

311  
00:10:57,990 --> 00:10:56,640  
unpredictable

312  
00:11:00,150 --> 00:10:58,000  
because people are running these

313  
00:11:01,350 --> 00:11:00,160

stations all the time you detect things

314

00:11:02,949 --> 00:11:01,360

that people wouldn't have detected

315

00:11:04,790 --> 00:11:02,959

otherwise

316

00:11:06,069 --> 00:11:04,800

time of day is another variable for

317

00:11:07,910 --> 00:11:06,079

example the band that i've been using

318

00:11:09,350 --> 00:11:07,920

what's called the 20 meter band is

319

00:11:12,870 --> 00:11:09,360

generally very good for long distance

320

00:11:14,470 --> 00:11:12,880

during the day and useless at night

321

00:11:16,389 --> 00:11:14,480

i'm finding actually that at times it

322

00:11:19,269 --> 00:11:16,399

works very well at night but it's kind

323

00:11:22,389 --> 00:11:19,279

of sporadic and we're not quite sure why

324

00:11:23,430 --> 00:11:22,399

sunspots have a huge effect on it

325

00:11:25,350 --> 00:11:23,440

we are now

326

00:11:27,670 --> 00:11:25,360

ending a sunspot minimum where there

327

00:11:30,550 --> 00:11:27,680

were basically no sunspots and slowly

328

00:11:33,350 --> 00:11:30,560

climbing into the range of high sunspots

329

00:11:34,949 --> 00:11:33,360

an 11 year cycle so in about 2025

330

00:11:36,790 --> 00:11:34,959

they're expecting there to be a high in

331

00:11:40,230 --> 00:11:36,800

the sunspot cycle and that generally

332

00:11:42,870 --> 00:11:40,240

causes extremely good radio propagation

333

00:11:45,190 --> 00:11:42,880

now we don't know what effect that has

334

00:11:47,990 --> 00:11:45,200

on psychic functioning for example but

335

00:11:49,750 --> 00:11:48,000

there's certainly uh some good data on a

336

00:11:51,350 --> 00:11:49,760

number of other physiological variables

337

00:11:52,310 --> 00:11:51,360

that suggest sunspots can affect them

338

00:11:54,550 --> 00:11:52,320

too

339

00:11:56,870 --> 00:11:54,560

time of year has a major effect

340

00:11:59,030 --> 00:11:56,880

sidereal time that is star time may have

341

00:12:01,030 --> 00:11:59,040

an effect on

342

00:12:04,310 --> 00:12:01,040

radio propagation and it looks like it

343

00:12:06,710 --> 00:12:04,320

also has an effect on psi based on

344

00:12:08,069 --> 00:12:06,720

some studies that have been done so

345

00:12:10,230 --> 00:12:08,079

these same variables that whisper is

346

00:12:13,190 --> 00:12:10,240

measuring may affect human behavior and

347

00:12:15,110 --> 00:12:13,200

rhythms including psi and health

348

00:12:16,710 --> 00:12:15,120

the big advantage of whisper is that

349

00:12:18,790 --> 00:12:16,720

whisper is able to make fine-grained

350

00:12:21,030 --> 00:12:18,800

measurements much finer than what are

351

00:12:22,629 --> 00:12:21,040

called the k index and a index

352

00:12:25,269 --> 00:12:22,639

and again most you probably don't know

353

00:12:28,310 --> 00:12:25,279

what those are but these are ways of

354

00:12:29,350 --> 00:12:28,320

measuring geomagnetic storms

355

00:12:32,310 --> 00:12:29,360

and

356

00:12:33,990 --> 00:12:32,320

they are done in three hour intervals

357

00:12:36,069 --> 00:12:34,000

and so the finest grain you can get is

358

00:12:38,790 --> 00:12:36,079

within three hours

359

00:12:40,870 --> 00:12:38,800

whisper is typically running a signal

360

00:12:43,590 --> 00:12:40,880

every 10 minutes you can actually set it

361

00:12:45,590 --> 00:12:43,600

to run a signal every two minutes

362

00:12:47,190 --> 00:12:45,600

although that tends to clog up the band

363

00:12:49,190 --> 00:12:47,200

a little bit so most people only run it

364

00:12:51,269 --> 00:12:49,200

every 10 minutes to allow more space for

365

00:12:52,870 --> 00:12:51,279

more stations but you can actually get

366

00:12:53,910 --> 00:12:52,880

measurements as fine grained as every

367

00:12:56,150 --> 00:12:53,920

two minutes

368

00:12:58,710 --> 00:12:56,160

instead of every three hours

369

00:13:01,110 --> 00:12:58,720

so for example if you were running a sci

370

00:13:03,750 --> 00:13:01,120

experiment you could actually look uh

371

00:13:05,190 --> 00:13:03,760

every two minutes and perhaps pick up

372

00:13:07,590 --> 00:13:05,200

some effects that you wouldn't otherwise

373

00:13:09,750 --> 00:13:07,600

be able to see whereas in the past

374

00:13:11,590 --> 00:13:09,760

people have used what are known as the k

375

00:13:13,829 --> 00:13:11,600

or a index there's another one called

376

00:13:15,509 --> 00:13:13,839

the a a index and they're basically all

377

00:13:16,790 --> 00:13:15,519

measuring the same thing

378

00:13:18,790 --> 00:13:16,800

and

379

00:13:21,350 --> 00:13:18,800

again are not very fine grain they're

380

00:13:23,190 --> 00:13:21,360

also not very fine-grained in terms of

381

00:13:24,230 --> 00:13:23,200

spatial locations there are only a few

382

00:13:26,389 --> 00:13:24,240

stations

383

00:13:27,990 --> 00:13:26,399

around the world that measure these the

384

00:13:29,430 --> 00:13:28,000

nearest to me in virginia beach is in

385

00:13:32,230 --> 00:13:29,440

fredericksburg virginia there's another

386

00:13:35,030 --> 00:13:32,240

one in boulder colorado but there are

387

00:13:37,430 --> 00:13:35,040

whisper stations all over the place and

388

00:13:39,110 --> 00:13:37,440

so you can maybe have a much finer

389

00:13:43,030 --> 00:13:39,120

spatial measurement as well as time

390

00:13:48,870 --> 00:13:45,670

so how do i do it well i'm a ham radio

391

00:13:51,670 --> 00:13:48,880

operator my call sign is kn for nbi

392

00:13:53,110 --> 00:13:51,680

and what i do is i send out a signal

393

00:13:54,710 --> 00:13:53,120

this is all computer controlled so i

394

00:13:56,310 --> 00:13:54,720

don't have to sit here and do it but i

395

00:13:58,310 --> 00:13:56,320

send out a signal once every 10 minutes

396

00:14:00,710 --> 00:13:58,320

that's received all over the world

397

00:14:02,470 --> 00:14:00,720

and everyone whose radio hears me

398

00:14:03,910 --> 00:14:02,480

their radio automatically uploads a

399

00:14:06,069 --> 00:14:03,920

report to an internet site called

400

00:14:08,310 --> 00:14:06,079

whispernet and then i can download and

401

00:14:10,389 --> 00:14:08,320

analyze the data for myself or i can

402

00:14:11,269 --> 00:14:10,399

analyze the data for any other station

403

00:14:12,949 --> 00:14:11,279

uh

404

00:14:15,110 --> 00:14:12,959

who's part of the network

405

00:14:16,470 --> 00:14:15,120

so if you look at the pictures there uh

406

00:14:19,910 --> 00:14:16,480

on the bottom

407

00:14:21,910 --> 00:14:19,920

it's got me in virginia beach kn for nbi

408

00:14:24,150 --> 00:14:21,920

and in this particular analysis all i

409

00:14:27,509 --> 00:14:24,160

looked at was

410

00:14:29,430 --> 00:14:27,519

how a fellow out in oregon kk 6pr was

411

00:14:31,269 --> 00:14:29,440

hearing my signal and that's what's on

412

00:14:33,590 --> 00:14:31,279

the right and what you can see there

413

00:14:35,670 --> 00:14:33,600

that's basically an entire day

414

00:14:39,430 --> 00:14:35,680

he couldn't hear me at all at night

415

00:14:41,910 --> 00:14:39,440

but around 1700 universal time there's a

416

00:14:44,150 --> 00:14:41,920

big peak and another one around i think

417

00:14:46,230 --> 00:14:44,160

it says 2300 universal time so in other

418

00:14:47,750 --> 00:14:46,240

words those two peaks

419

00:14:49,750 --> 00:14:47,760

are where

420

00:14:51,509 --> 00:14:49,760

he would have gotten the best reception

421

00:14:54,790 --> 00:14:51,519

of my signal and then in the middle of

422

00:14:56,389 --> 00:14:54,800

the day it's uh it's pretty iffy and so

423

00:14:58,389 --> 00:14:56,399

this is the sort of plot that you could

424

00:15:00,550 --> 00:14:58,399

get but you can get this

425

00:15:01,430 --> 00:15:00,560

with averages for two weeks you can get

426

00:15:03,910 --> 00:15:01,440

it

427

00:15:06,470 --> 00:15:03,920

10 minutes by 10 minutes or you can get

428

00:15:08,870 --> 00:15:06,480

it every two minutes again if you uh if

429

00:15:10,150 --> 00:15:08,880

you need that kind of fine grain detail

430

00:15:12,389 --> 00:15:10,160

and

431

00:15:14,870 --> 00:15:12,399

you could then average if i wanted to

432

00:15:16,949 --> 00:15:14,880

say all the stations in oregon or all

433

00:15:19,750 --> 00:15:16,959

the stations on the west coast or let's

434

00:15:22,150 --> 00:15:19,760

say i wanted to do an experiment uh

435

00:15:23,910 --> 00:15:22,160

with somebody who's sitting in a

436

00:15:26,310 --> 00:15:23,920

research station in antarctica who

437

00:15:28,389 --> 00:15:26,320

wanted to do a psy experiment

438

00:15:30,710 --> 00:15:28,399

i could look at the path to antarctica

439

00:15:32,949 --> 00:15:30,720

and see what was happening in terms of

440

00:15:34,470 --> 00:15:32,959

radio reception the geomagnetic field

441

00:15:36,550 --> 00:15:34,480

and compare that to what was going on

442

00:15:39,350 --> 00:15:36,560

with the psy experiment so that's how i

443

00:15:41,670 --> 00:15:40,790

now here's what my whisper station looks

444

00:15:44,870 --> 00:15:41,680

like

445

00:15:46,230 --> 00:15:44,880

on the left is my commercial transceiver

446

00:15:47,670 --> 00:15:46,240

which uh

447

00:15:49,110 --> 00:15:47,680

looks really fancy but actually it's

448

00:15:50,550 --> 00:15:49,120

kind of a low end one you don't need a

449

00:15:51,350 --> 00:15:50,560

really fancy one

450

00:15:52,550 --> 00:15:51,360

uh

451  
00:15:55,910 --> 00:15:52,560  
but you don't have to have a big one

452  
00:15:58,790 --> 00:15:55,920  
like that on the right is actually a

453  
00:16:00,150 --> 00:15:58,800  
kit that i uh just finished building and

454  
00:16:01,910 --> 00:16:00,160  
it's a little tiny one you can hold in

455  
00:16:03,990 --> 00:16:01,920  
your hand and you can take anywhere hook

456  
00:16:05,110 --> 00:16:04,000  
it up to an antenna and send a whisper

457  
00:16:07,350 --> 00:16:05,120  
signal so you don't need the big

458  
00:16:10,230 --> 00:16:07,360  
elaborate transceiver

459  
00:16:11,829 --> 00:16:10,240  
and as i'll show you in order to receive

460  
00:16:13,350 --> 00:16:11,839  
you don't need a hand license at all and

461  
00:16:15,030 --> 00:16:13,360  
to use the internet site you don't even

462  
00:16:16,389 --> 00:16:15,040  
have to know anything about radio as

463  
00:16:17,670 --> 00:16:16,399

long as you have some idea of what you

464

00:16:19,829 --> 00:16:17,680

want to analyze but this is what i'm

465

00:16:21,509 --> 00:16:19,839

using right now and mine in fact is

466

00:16:22,870 --> 00:16:21,519

running right here on the laptop

467

00:16:25,189 --> 00:16:22,880

computer at the same time as i do in

468

00:16:29,749 --> 00:16:25,199

this powerpoint so uh

469

00:16:33,430 --> 00:16:31,350

and this is what happens when you then

470

00:16:35,110 --> 00:16:33,440

sign on to whispernet and so i did this

471

00:16:36,790 --> 00:16:35,120

on

472

00:16:38,710 --> 00:16:36,800

february 22nd a little earlier in the

473

00:16:40,470 --> 00:16:38,720

week uh in the middle of the day for

474

00:16:41,990 --> 00:16:40,480

about an hour and this is part of the

475

00:16:44,550 --> 00:16:42,000

download and what it's showing is the

476  
00:16:45,990 --> 00:16:44,560  
time what the frequency was the signal

477  
00:16:48,710 --> 00:16:46,000  
the noise ratio and a bunch of other

478  
00:16:52,870 --> 00:16:48,720  
data and who was hearing me so

479  
00:16:55,910 --> 00:16:52,880  
um a station in hawaii ai6vn kh6 heard

480  
00:16:59,030 --> 00:16:55,920  
me once ea bfk and the canary islands

481  
00:17:02,150 --> 00:16:59,040  
heard me a bunch of times uh k4cod in

482  
00:17:03,350 --> 00:17:02,160  
alabama heard me k5xl in texas heard me

483  
00:17:05,429 --> 00:17:03,360  
and so this

484  
00:17:07,590 --> 00:17:05,439  
shows the signal strength the distance

485  
00:17:09,909 --> 00:17:07,600  
the azimuth uh you can pull a lot of

486  
00:17:12,390 --> 00:17:09,919  
information out of this and this is just

487  
00:17:16,949 --> 00:17:12,400  
a piece of um in that particular hour

488  
00:17:18,150 --> 00:17:16,959

there were 123 spots of my signal um

489

00:17:19,750 --> 00:17:18,160

and you may wonder well how do i know

490

00:17:21,429 --> 00:17:19,760

where these folks are there's another

491

00:17:23,350 --> 00:17:21,439

website where you can look up any call

492

00:17:24,789 --> 00:17:23,360

sign in the world and find out where

493

00:17:26,630 --> 00:17:24,799

they are and often they'll post

494

00:17:29,669 --> 00:17:26,640

information about what they're doing so

495

00:17:31,350 --> 00:17:29,679

on my page on what's called qrz.com

496

00:17:33,270 --> 00:17:31,360

i mention how i do whisper experiments

497

00:17:35,190 --> 00:17:33,280

on 20 meters and some of these will show

498

00:17:37,430 --> 00:17:35,200

pictures of their big antenna farms or

499

00:17:39,190 --> 00:17:37,440

their little antenna farms my antenna is

500

00:17:40,390 --> 00:17:39,200

a wire over the garage so it's not very

501  
00:17:42,230 --> 00:17:40,400  
elaborate because you don't really need

502  
00:17:44,390 --> 00:17:42,240  
an elaborate setup but this is what you

503  
00:17:47,029 --> 00:17:44,400  
would get and then you can

504  
00:17:49,190 --> 00:17:47,039  
process this in any statistics program

505  
00:17:50,710 --> 00:17:49,200  
i just use excel right now to process my

506  
00:17:54,070 --> 00:17:50,720  
data but i may get more sophisticated

507  
00:17:57,190 --> 00:17:55,909  
and this is a map i think i showed this

508  
00:18:00,230 --> 00:17:57,200  
well i showed one map this is a

509  
00:18:02,950 --> 00:18:00,240  
different map this is a map of that same

510  
00:18:04,710 --> 00:18:02,960  
hour back on the 22nd showing everybody

511  
00:18:07,590 --> 00:18:04,720  
that heard me again it ranges from on

512  
00:18:09,990 --> 00:18:07,600  
the left there a fellow in hawaii to on

513  
00:18:11,990 --> 00:18:10,000

the right there's one in austria and one

514

00:18:15,190 --> 00:18:12,000

in the canary islands

515

00:18:16,950 --> 00:18:15,200

and there is one down in costa rica

516

00:18:18,789 --> 00:18:16,960

and then right in the middle you don't

517

00:18:21,110 --> 00:18:18,799

see my call sign but you see a call sign

518

00:18:23,110 --> 00:18:21,120

n4wqh

519

00:18:24,070 --> 00:18:23,120

that's a fellow who's about 10 miles

520

00:18:25,990 --> 00:18:24,080

away

521

00:18:27,750 --> 00:18:26,000

and he can hear me on what's called

522

00:18:29,510 --> 00:18:27,760

ground wave without it bouncing off the

523

00:18:30,950 --> 00:18:29,520

ionosphere which is a really good

524

00:18:32,950 --> 00:18:30,960

control

525

00:18:34,789 --> 00:18:32,960

for just the general noise that's out

526

00:18:36,310 --> 00:18:34,799

there and so

527

00:18:37,990 --> 00:18:36,320

theoretically my signal should be

528

00:18:39,909 --> 00:18:38,000

absolutely steady at his station but

529

00:18:41,510 --> 00:18:39,919

it's not and so i can actually control

530

00:18:43,830 --> 00:18:41,520

for the noise level and that can be

531

00:18:45,909 --> 00:18:43,840

helpful and i think maybe the next slide

532

00:18:47,350 --> 00:18:45,919

shows that so this is a typical map you

533

00:18:49,750 --> 00:18:47,360

can get again you can set all kinds of

534

00:18:51,830 --> 00:18:49,760

different time periods um who you're

535

00:18:54,070 --> 00:18:51,840

listening to who's listening to you and

536

00:18:56,310 --> 00:18:54,080

any combination of that so you could

537

00:18:57,669 --> 00:18:56,320

pick up just who happens to be there but

538

00:18:59,830 --> 00:18:57,679

if you were doing a specific kind of

539

00:19:01,590 --> 00:18:59,840

anomalies experiment you might arrange

540

00:19:04,789 --> 00:19:01,600

with someone

541

00:19:07,029 --> 00:19:04,799

again let's say i was studying uh psy

542

00:19:09,029 --> 00:19:07,039

and there was an experiment here

543

00:19:10,470 --> 00:19:09,039

and the receiver

544

00:19:12,870 --> 00:19:10,480

in a remote viewing experiment with

545

00:19:14,549 --> 00:19:12,880

someone in california he might be in a

546

00:19:17,430 --> 00:19:14,559

park a state park there near san

547

00:19:20,310 --> 00:19:17,440

francisco where kfs is if you look over

548

00:19:21,669 --> 00:19:20,320

there on the left and we'd have a radio

549

00:19:23,830 --> 00:19:21,679

link there and be measuring radio

550

00:19:27,750 --> 00:19:23,840

propagation at the same time as looking

551  
00:19:31,430 --> 00:19:29,990  
now this is an example uh this person

552  
00:19:34,789 --> 00:19:31,440  
happens to be

553  
00:19:39,510 --> 00:19:37,190  
so what i'm measuring here is not what's

554  
00:19:41,510 --> 00:19:39,520  
bouncing off the ionosphere uh in terms

555  
00:19:42,710 --> 00:19:41,520  
of my signal but what it's actually

556  
00:19:44,470 --> 00:19:42,720  
measuring is the noise that's

557  
00:19:47,350 --> 00:19:44,480  
interfering with my signal at his

558  
00:19:49,029 --> 00:19:47,360  
station a few miles away over 24 hours

559  
00:19:51,190 --> 00:19:49,039  
and i have an arrow there for sunrise

560  
00:19:53,190 --> 00:19:51,200  
and an error there for sunset and so you

561  
00:19:55,830 --> 00:19:53,200  
can see that in the night there isn't

562  
00:19:58,070 --> 00:19:55,840  
very much variability in my signal

563  
00:20:00,310 --> 00:19:58,080

strength at his station and in general

564

00:20:02,230 --> 00:20:00,320

at night the 20 meter band there's no

565

00:20:04,470 --> 00:20:02,240

ionospheric propagation at all although

566

00:20:06,789 --> 00:20:04,480

that's not totally true

567

00:20:08,310 --> 00:20:06,799

whereas a little bit after sunrise not

568

00:20:10,870 --> 00:20:08,320

only you start picking up stations

569

00:20:13,750 --> 00:20:10,880

around the us but also you start picking

570

00:20:16,630 --> 00:20:13,760

up ionospherically uh reflected noise

571

00:20:18,870 --> 00:20:16,640

from around the u.s and so

572

00:20:21,350 --> 00:20:18,880

as the dots get wider in spacing more

573

00:20:23,590 --> 00:20:21,360

variable and get lower

574

00:20:26,070 --> 00:20:23,600

without showing as my signal to noise

575

00:20:28,310 --> 00:20:26,080

ratio at his station is worse and much

576  
00:20:30,310 --> 00:20:28,320  
more variable and that continues all day

577  
00:20:31,909 --> 00:20:30,320  
until a little bit after sunset when it

578  
00:20:35,590 --> 00:20:31,919  
goes back to

579  
00:20:38,149 --> 00:20:35,600  
a quieter uh radio band and less

580  
00:20:39,590 --> 00:20:38,159  
variability and so this is a control so

581  
00:20:42,149 --> 00:20:39,600  
we could see how much of this is just

582  
00:20:43,430 --> 00:20:42,159  
due to noise and how much of it's due to

583  
00:20:45,110 --> 00:20:43,440  
different kinds of reflections from the

584  
00:20:46,870 --> 00:20:45,120  
ionosphere so again you can measure a

585  
00:20:47,990 --> 00:20:46,880  
lot of different things with whisper

586  
00:20:51,110 --> 00:20:48,000  
depending on what you're interested in

587  
00:20:53,830 --> 00:20:52,070  
so

588  
00:20:55,270 --> 00:20:53,840

you may be wondering that's all very

589

00:20:57,270 --> 00:20:55,280

nice your ham radio operator you

590

00:20:58,789 --> 00:20:57,280

understand this and you may be saying i

591

00:21:00,789 --> 00:20:58,799

don't understand any of what this guy's

592

00:21:02,390 --> 00:21:00,799

talking about so the question is how can

593

00:21:04,230 --> 00:21:02,400

you do whisper well

594

00:21:05,350 --> 00:21:04,240

anyone can receive signals and upload

595

00:21:07,190 --> 00:21:05,360

reports

596

00:21:08,630 --> 00:21:07,200

you need a receiver for it but now

597

00:21:11,270 --> 00:21:08,640

they're making little receivers which

598

00:21:13,510 --> 00:21:11,280

are basically uh they look like a flash

599

00:21:15,270 --> 00:21:13,520

drive that you plug into your usb port

600

00:21:17,029 --> 00:21:15,280

you can antenna to it

601  
00:21:18,390 --> 00:21:17,039  
and your computer does all the work and

602  
00:21:20,710 --> 00:21:18,400  
they're very cheap so you don't need a

603  
00:21:21,909 --> 00:21:20,720  
big fancy receiver but if you're

604  
00:21:23,029 --> 00:21:21,919  
somebody who doesn't even want to use a

605  
00:21:26,149 --> 00:21:23,039  
receiver

606  
00:21:27,430 --> 00:21:26,159  
download reports from whispernet and

607  
00:21:29,270 --> 00:21:27,440  
analyze the data that's everybody

608  
00:21:30,310 --> 00:21:29,280  
including all of you

609  
00:21:31,830 --> 00:21:30,320  
you have to understand a little about

610  
00:21:34,230 --> 00:21:31,840  
what the data means

611  
00:21:36,549 --> 00:21:34,240  
but uh for example

612  
00:21:38,950 --> 00:21:36,559  
i just did this a couple days ago i went

613  
00:21:41,750 --> 00:21:38,960

and looked at kfs which is a receive

614

00:21:43,430 --> 00:21:41,760

only station in california in a very low

615

00:21:44,710 --> 00:21:43,440

noise area it's in a state park in

616

00:21:46,390 --> 00:21:44,720

california

617

00:21:48,070 --> 00:21:46,400

and you can see that he is picking up

618

00:21:48,950 --> 00:21:48,080

signals

619

00:21:52,630 --> 00:21:48,960

from

620

00:21:53,990 --> 00:21:52,640

fact his antarctica signals are

621

00:21:55,909 --> 00:21:54,000

interesting because

622

00:21:58,390 --> 00:21:55,919

dp0gvn

623

00:22:01,070 --> 00:21:58,400

is a german research station

624

00:22:02,710 --> 00:22:01,080

on the ice in antarctica and

625

00:22:05,110 --> 00:22:02,720

dp0pol

626  
00:22:07,750 --> 00:22:05,120  
is a supply ship and research ship from

627  
00:22:09,669 --> 00:22:07,760  
germany and i tracked them by radio all

628  
00:22:10,950 --> 00:22:09,679  
the way from germany all the way down

629  
00:22:12,390 --> 00:22:10,960  
through the atlantic ocean until they

630  
00:22:13,990 --> 00:22:12,400  
dropped off their supplies there at

631  
00:22:15,190 --> 00:22:14,000  
dp0gvn

632  
00:22:18,070 --> 00:22:15,200  
and since then they've been kind of

633  
00:22:20,950 --> 00:22:18,080  
meandering around the antarctic ocean

634  
00:22:22,950 --> 00:22:20,960  
and south america and

635  
00:22:26,070 --> 00:22:22,960  
so you can actually track this fellow on

636  
00:22:29,669 --> 00:22:27,590  
again if you wanted to have a

637  
00:22:31,669 --> 00:22:29,679  
well-controlled uh psy experiment

638  
00:22:32,789 --> 00:22:31,679

looking at distance uh maybe he'd have

639

00:22:36,870 --> 00:22:32,799

somebody there doing a little bit of

640

00:22:38,950 --> 00:22:36,880

real remote viewing of penguins and uh

641

00:22:41,510 --> 00:22:38,960

that you could then uh compare his

642

00:22:46,390 --> 00:22:41,520

success in remote viewing to geomagnetic

643

00:22:49,110 --> 00:22:47,190

now

644

00:22:51,029 --> 00:22:49,120

getting a little bit off topic in the

645

00:22:53,430 --> 00:22:51,039

sense of not talking about how whisper

646

00:22:55,029 --> 00:22:53,440

can be used i just throw this in because

647

00:22:56,070 --> 00:22:55,039

it's something that sort of bugged me

648

00:22:57,750 --> 00:22:56,080

for a while

649

00:22:59,350 --> 00:22:57,760

is one of the uh

650

00:23:01,750 --> 00:22:59,360

comments that skeptics often come up

651  
00:23:03,510 --> 00:23:01,760  
with about psy is that it's impossible

652  
00:23:05,270 --> 00:23:03,520  
because it defies the laws of physics

653  
00:23:07,350 --> 00:23:05,280  
and therefore it's not real

654  
00:23:08,789 --> 00:23:07,360  
and so i wanted to refute the idea that

655  
00:23:10,789 --> 00:23:08,799  
psy couldn't be real because of the

656  
00:23:13,990 --> 00:23:10,799  
inverse square law which if you remember

657  
00:23:15,750 --> 00:23:14,000  
your high school or college physics um

658  
00:23:17,190 --> 00:23:15,760  
the idea would be that because psi

659  
00:23:19,270 --> 00:23:17,200  
doesn't seem to depend on distance it

660  
00:23:21,270 --> 00:23:19,280  
couldn't be real uh the most recent

661  
00:23:23,830 --> 00:23:21,280  
people to talk about this in skeptical

662  
00:23:25,510 --> 00:23:23,840  
inquirer were reeber and alcock

663  
00:23:27,350 --> 00:23:25,520

and the problem is is that that law only

664

00:23:29,110 --> 00:23:27,360

applies to forces and fields like the

665

00:23:31,110 --> 00:23:29,120

force of gravity which declines with the

666

00:23:32,310 --> 00:23:31,120

inverse square of the distance but for

667

00:23:33,430 --> 00:23:32,320

communication that's completely

668

00:23:35,750 --> 00:23:33,440

irrelevant

669

00:23:37,590 --> 00:23:35,760

that signal-to-noise ratio is the only

670

00:23:38,789 --> 00:23:37,600

relevant parameter not force or field

671

00:23:40,710 --> 00:23:38,799

strength

672

00:23:42,390 --> 00:23:40,720

and a great example of that is what i'm

673

00:23:43,990 --> 00:23:42,400

demonstrating here with whisper that i

674

00:23:46,230 --> 00:23:44,000

have a 100 milliwatt signal which is

675

00:23:48,149 --> 00:23:46,240

less than your home wi-fi but it can be

676  
00:23:50,630 --> 00:23:48,159  
heard in antarctica because whisper can

677  
00:23:53,590 --> 00:23:50,640  
decode at -31 decibel signal to noise

678  
00:23:55,909 --> 00:23:53,600  
ratio and so we have no idea

679  
00:23:58,710 --> 00:23:55,919  
how psi might work but there's no reason

680  
00:24:00,630 --> 00:23:58,720  
to think that whatever mechanism it uses

681  
00:24:02,230 --> 00:24:00,640  
can't also pull signals out of

682  
00:24:03,830 --> 00:24:02,240  
incredibly high noise and of course we

683  
00:24:05,269 --> 00:24:03,840  
know that there is a lot of noise and

684  
00:24:07,110 --> 00:24:05,279  
it's very hard to get good results in

685  
00:24:08,710 --> 00:24:07,120  
psi experiments now we still have a

686  
00:24:10,870 --> 00:24:08,720  
problem because in psi research we don't

687  
00:24:12,950 --> 00:24:10,880  
have a way to quantitatively specify the

688  
00:24:14,789 --> 00:24:12,960

signal level or the noise level but it

689

00:24:16,789 --> 00:24:14,799

is clear the inverse square law is just

690

00:24:19,590 --> 00:24:16,799

simply irrelevant again that measures

691

00:24:21,110 --> 00:24:19,600

forces and fields uh for communication

692

00:24:23,190 --> 00:24:21,120

all that really counts as the signal to

693

00:24:25,750 --> 00:24:23,200

noise ratio if you've got any signal at

694

00:24:27,510 --> 00:24:25,760

all and it can be an awfully tiny signal

695

00:24:29,990 --> 00:24:27,520

again 100 milliwatts that's your

696

00:24:31,590 --> 00:24:30,000

flashlight that's your home wi-fi heard

697

00:24:34,789 --> 00:24:31,600

very nicely in antarctica if you've got

698

00:24:38,390 --> 00:24:36,310

again just use an example in case that

699

00:24:40,470 --> 00:24:38,400

was a little bit unclear one example is

700

00:24:42,149 --> 00:24:40,480

listen to fm radio in my car

701  
00:24:43,750 --> 00:24:42,159  
and i can hear equally good quality in

702  
00:24:46,310 --> 00:24:43,760  
the parking lot next to the transmitter

703  
00:24:48,549 --> 00:24:46,320  
at the local public radio station or 10

704  
00:24:50,149 --> 00:24:48,559  
miles away at my home and the quality

705  
00:24:52,549 --> 00:24:50,159  
only drops when the signal gets close to

706  
00:24:54,470 --> 00:24:52,559  
the noise level and then again using

707  
00:24:56,549 --> 00:24:54,480  
whisper my 0.1 watt signal 100

708  
00:24:58,230 --> 00:24:56,559  
milliwatts like flashlight strength is

709  
00:25:00,149 --> 00:24:58,240  
decoded equally well in antarctica

710  
00:25:01,510 --> 00:25:00,159  
germany and in virginia despite

711  
00:25:02,870 --> 00:25:01,520  
different numbers of bounces from the

712  
00:25:05,029 --> 00:25:02,880  
ionosphere

713  
00:25:06,789 --> 00:25:05,039

and the zero the noise ratio depends on

714

00:25:08,630 --> 00:25:06,799

geomagnetic factors

715

00:25:09,990 --> 00:25:08,640

and again that depends that resembles

716

00:25:11,830 --> 00:25:10,000

psi results where the quality of the

717

00:25:13,750 --> 00:25:11,840

results depends on the index of

718

00:25:15,909 --> 00:25:13,760

geomagnetic disturbance so persinger

719

00:25:18,630 --> 00:25:15,919

encyrpter looked at crippner's old data

720

00:25:20,630 --> 00:25:18,640

on dream telepathy and found that

721

00:25:23,029 --> 00:25:20,640

basically the experiments only worked

722

00:25:24,630 --> 00:25:23,039

when the geomagnetic disturbance was

723

00:25:26,230 --> 00:25:24,640

very low and there have been some other

724

00:25:27,750 --> 00:25:26,240

studies too including some ones that

725

00:25:30,310 --> 00:25:27,760

suggest that things like poltergeist

726

00:25:32,950 --> 00:25:30,320

activity might actually increase when

727

00:25:34,630 --> 00:25:32,960

there are geomagnetic disturbances and

728

00:25:38,549 --> 00:25:34,640

you know more work needs to be done but

729

00:25:42,789 --> 00:25:40,710

and whisper may be a lot more sensitive

730

00:25:44,230 --> 00:25:42,799

than standard indices like the a and k

731

00:25:46,149 --> 00:25:44,240

and the a a index for measuring

732

00:25:47,269 --> 00:25:46,159

geomagnetic disturbances these are the

733

00:25:49,269 --> 00:25:47,279

indices that have been used by

734

00:25:52,070 --> 00:25:49,279

parapsychologists and others

735

00:25:54,390 --> 00:25:52,080

an example i'll use for my own data is

736

00:25:57,269 --> 00:25:54,400

back in december there was a geomagnetic

737

00:25:58,230 --> 00:25:57,279

storm predicted based on activity on the

738

00:26:00,390 --> 00:25:58,240

sun

739

00:26:03,590 --> 00:26:00,400

and it ended up being a fizzle in that

740

00:26:06,789 --> 00:26:03,600

there was a very weakly elevated a index

741

00:26:08,630 --> 00:26:06,799

but i was measuring propagation and

742

00:26:09,590 --> 00:26:08,640

found a huge effect

743

00:26:11,350 --> 00:26:09,600

and so

744

00:26:12,789 --> 00:26:11,360

it shows that whisper may be much more

745

00:26:15,990 --> 00:26:12,799

sensitive than some of these standard

746

00:26:17,590 --> 00:26:16,000

indices to what's going on uh

747

00:26:19,750 --> 00:26:17,600

as an adjunct to the things that other

748

00:26:22,310 --> 00:26:19,760

people are using to measure uh

749

00:26:23,830 --> 00:26:22,320

geomagnetic effects for their various

750

00:26:25,110 --> 00:26:23,840

anomaly studies so i'll just show you an

751  
00:26:27,510 --> 00:26:25,120  
example here i think i've got a graph of

752  
00:26:31,269 --> 00:26:29,350  
so this is just my graph of my own data

753  
00:26:34,549 --> 00:26:31,279  
and what you're seeing there on the

754  
00:26:36,390 --> 00:26:34,559  
x-axis is the date in december 2020

755  
00:26:39,110 --> 00:26:36,400  
and then on the y-axis

756  
00:26:40,549 --> 00:26:39,120  
is in the blue is the number of spots of

757  
00:26:42,630 --> 00:26:40,559  
my signal that is how many people

758  
00:26:44,310 --> 00:26:42,640  
uploaded a report of my signal to

759  
00:26:45,830 --> 00:26:44,320  
whisper net

760  
00:26:48,310 --> 00:26:45,840  
and you can see that for several days

761  
00:26:49,830 --> 00:26:48,320  
prior to the geomagnetic storm there's a

762  
00:26:51,350 --> 00:26:49,840  
certain level of people spotting my

763  
00:26:53,269 --> 00:26:51,360

signal

764

00:26:54,149 --> 00:26:53,279

it was predicted to arrive on december

765

00:26:55,830 --> 00:26:54,159

9th

766

00:26:57,669 --> 00:26:55,840

it

767

00:26:59,510 --> 00:26:57,679

and if you look at the red line which is

768

00:27:02,070 --> 00:26:59,520

the ap index one of the geomagnetic

769

00:27:03,909 --> 00:27:02,080

indices it shows nothing happened at all

770

00:27:07,430 --> 00:27:03,919

but if you look at the people spotting

771

00:27:09,830 --> 00:27:07,440

my signal it more than doubled uh

772

00:27:12,230 --> 00:27:09,840

within a couple of days and then dropped

773

00:27:14,870 --> 00:27:12,240

down to baseline levels and so indeed

774

00:27:16,310 --> 00:27:14,880

there was an effect of this solar storm

775

00:27:19,350 --> 00:27:16,320

but not one that was picked up by the

776  
00:27:21,430 --> 00:27:19,360  
standard geomagnetic indices so again

777  
00:27:22,870 --> 00:27:21,440  
this may be more sensitive

778  
00:27:24,950 --> 00:27:22,880  
and it would seem in a lot of anomalies

779  
00:27:26,789 --> 00:27:24,960  
research we could certainly use some

780  
00:27:28,149 --> 00:27:26,799  
sensitive measures of things that are

781  
00:27:32,710 --> 00:27:28,159  
affecting

782  
00:27:36,070 --> 00:27:33,909  
quickly mentioning here because this

783  
00:27:38,870 --> 00:27:36,080  
comes up a lot in anomalies research or

784  
00:27:40,870 --> 00:27:38,880  
something called schumann resonances and

785  
00:27:42,470 --> 00:27:40,880  
what schumann resonances are

786  
00:27:43,830 --> 00:27:42,480  
is lightning creates radio waves that

787  
00:27:46,230 --> 00:27:43,840  
reverberate between the earth and the

788  
00:27:48,230 --> 00:27:46,240

ionosphere around the earth and so they

789

00:27:50,389 --> 00:27:48,240

go all the way around the earth and the

790

00:27:52,070 --> 00:27:50,399

first resonant frequency is about 7.8

791

00:27:53,269 --> 00:27:52,080

hertz which is near the alpha brainwave

792

00:27:54,950 --> 00:27:53,279

frequency

793

00:27:57,190 --> 00:27:54,960

and so there have been some studies

794

00:27:59,430 --> 00:27:57,200

suggesting that uh

795

00:28:01,909 --> 00:27:59,440

the human resonances which again are

796

00:28:03,510 --> 00:28:01,919

affected by geomagnetic effects just

797

00:28:04,950 --> 00:28:03,520

like everything else with radio waves

798

00:28:06,389 --> 00:28:04,960

that these could be affecting our brain

799

00:28:08,470 --> 00:28:06,399

waves our health our heart rate and a

800

00:28:11,110 --> 00:28:08,480

lot of other things and so that's what

801  
00:28:14,710 --> 00:28:13,029  
so just give you a couple of other

802  
00:28:16,950 --> 00:28:14,720  
applications possible for whisper and

803  
00:28:18,549 --> 00:28:16,960  
then open it up to questions uh

804  
00:28:19,269 --> 00:28:18,559  
one again is a

805  
00:28:21,269 --> 00:28:19,279  
the

806  
00:28:23,269 --> 00:28:21,279  
fine resolution measure of ionospheric

807  
00:28:24,630 --> 00:28:23,279  
variables related to global coherence

808  
00:28:26,630 --> 00:28:24,640  
there's a group called the heart math

809  
00:28:29,269 --> 00:28:26,640  
institute and they have uh

810  
00:28:30,710 --> 00:28:29,279  
presented at ssc meetings i believe york

811  
00:28:31,750 --> 00:28:30,720  
dobbins was co-author on one of their

812  
00:28:33,350 --> 00:28:31,760  
papers

813  
00:28:35,350 --> 00:28:33,360

and they've looked at the

814

00:28:37,350 --> 00:28:35,360

traditional ionospheric geomagnetic

815

00:28:38,870 --> 00:28:37,360

measures and down on the right hand side

816

00:28:40,470 --> 00:28:38,880

is just an example of all the ones they

817

00:28:43,350 --> 00:28:40,480

used and found some rather strong

818

00:28:45,029 --> 00:28:43,360

relationships with human physiology

819

00:28:46,950 --> 00:28:45,039

and so whisper might offer an additional

820

00:28:48,950 --> 00:28:46,960

measure with finer temporal and spatial

821

00:28:51,590 --> 00:28:48,960

resolution that could be added to what

822

00:28:53,510 --> 00:28:51,600

they've done in the past and uh and

823

00:28:59,590 --> 00:28:53,520

measure these effects on human

824

00:29:03,110 --> 00:29:01,269

and another one again is fine resolution

825

00:29:04,549 --> 00:29:03,120

measurements of geomagnetic disturbance

826

00:29:05,830 --> 00:29:04,559

related to psi experiments and

827

00:29:07,430 --> 00:29:05,840

experiences

828

00:29:09,269 --> 00:29:07,440

so a lot of this work had been done by

829

00:29:11,110 --> 00:29:09,279

michael persinger and then cripner and

830

00:29:12,870 --> 00:29:11,120

persinger found evidence for enhanced

831

00:29:14,950 --> 00:29:12,880

congruence between dreams and distant

832

00:29:17,190 --> 00:29:14,960

target material during periods of

833

00:29:18,870 --> 00:29:17,200

decreased geomagnetic activity

834

00:29:20,789 --> 00:29:18,880

in other words when the geomagnetic

835

00:29:22,710 --> 00:29:20,799

field is quiet not only is that

836

00:29:24,950 --> 00:29:22,720

generally good for radio propagation but

837

00:29:27,110 --> 00:29:24,960

it seems good for side propagation too

838

00:29:29,669 --> 00:29:27,120

whatever that might be so again here we

839

00:29:32,230 --> 00:29:29,679

have a measure with finer temporal and

840

00:29:34,710 --> 00:29:32,240

spatial resolution so none of this has

841

00:29:37,190 --> 00:29:34,720

been applied yet but the opportunity is

842

00:29:38,070 --> 00:29:37,200

there and i think that's the last one

843

00:29:40,230 --> 00:29:38,080

oh

844

00:29:41,990 --> 00:29:40,240

not quite so this is the last one this

845

00:29:44,310 --> 00:29:42,000

might also be useful for other anomalies

846

00:29:46,310 --> 00:29:44,320

uh for example in astrology astrology is

847

00:29:48,870 --> 00:29:46,320

all about subtle solar and lunar and

848

00:29:50,389 --> 00:29:48,880

planetary effects on biological systems

849

00:29:52,389 --> 00:29:50,399

and whisper might be helpful in

850

00:29:54,950 --> 00:29:52,399

measuring some of those because again

851  
00:29:57,510 --> 00:29:54,960  
it's very sensitive to disturbances due

852  
00:29:59,510 --> 00:29:57,520  
to solar radiation uh couldn't hurt

853  
00:30:01,430 --> 00:29:59,520  
looking at it for other kinds of effects

854  
00:30:02,870 --> 00:30:01,440  
on biological systems

855  
00:30:04,630 --> 00:30:02,880  
another one i find quite interesting is

856  
00:30:06,149 --> 00:30:04,640  
ufo experiences

857  
00:30:08,870 --> 00:30:06,159  
it might be helpful in measuring local

858  
00:30:10,789 --> 00:30:08,880  
geomagnetic disturbances in ufo cases i

859  
00:30:11,909 --> 00:30:10,799  
was reading a book by john keel about

860  
00:30:14,470 --> 00:30:11,919  
some

861  
00:30:16,230 --> 00:30:14,480  
ufo cases in west virginia i was just

862  
00:30:18,149 --> 00:30:16,240  
curious so i looked up in the database

863  
00:30:19,830 --> 00:30:18,159

and there were some huge geomagnetic

864

00:30:22,230 --> 00:30:19,840

storms right around the time that

865

00:30:23,350 --> 00:30:22,240

everyone was reporting these

866

00:30:27,909 --> 00:30:23,360

ufo

867

00:30:31,590 --> 00:30:29,590

potentially helpful in measuring some

868

00:30:35,430 --> 00:30:31,600

things that might help explain some of

869

00:30:39,430 --> 00:30:37,510

and there is my uh

870

00:30:40,789 --> 00:30:39,440

list of references to leave it up for a

871

00:30:42,310 --> 00:30:40,799

little bit here so i know that this is

872

00:30:43,990 --> 00:30:42,320

being recorded so if anybody wants to

873

00:30:46,230 --> 00:30:44,000

look at any of the references there are

874

00:30:47,590 --> 00:30:46,240

many many references on on

875

00:30:49,029 --> 00:30:47,600

studies that have been done using these

876

00:30:51,029 --> 00:30:49,039

variables

877

00:30:53,590 --> 00:30:51,039

and the whisper uh

878

00:30:55,029 --> 00:30:53,600

pages have references to how whisper net

879

00:30:56,870 --> 00:30:55,039

works

880

00:30:59,029 --> 00:30:56,880

great well thank you so much that was

881

00:31:01,590 --> 00:30:59,039

very interesting talk and um thought

882

00:31:05,029 --> 00:31:01,600

provoking um and it's now time for some

883

00:31:06,789 --> 00:31:05,039

q a um and so i see we already have one

884

00:31:08,950 --> 00:31:06,799

question in the chat window which i will

885

00:31:11,190 --> 00:31:08,960

relate to you unless you can in the

886

00:31:13,190 --> 00:31:11,200

questions window can you see that uh

887

00:31:15,430 --> 00:31:13,200

doug if not i will relay that to you

888

00:31:18,310 --> 00:31:15,440

questions uh

889

00:31:21,350 --> 00:31:18,320

yes i've got the questions open i see

890

00:31:21,360 --> 00:31:25,590

there you go so um

891

00:31:30,549 --> 00:31:27,269

having me read them to you and then

892

00:31:32,549 --> 00:31:30,559

anyone else who wishes to either chat or

893

00:31:35,509 --> 00:31:32,559

in the questions not the chat box in the

894

00:31:37,669 --> 00:31:35,519

questions box uh to write your question

895

00:31:39,430 --> 00:31:37,679

or you can raise your hand and then we

896

00:31:41,350 --> 00:31:39,440

will call on you and turn on your camera

897

00:31:42,710 --> 00:31:41,360

and microphone and you can talk directly

898

00:31:43,669 --> 00:31:42,720

with dog if your

899

00:31:45,669 --> 00:31:43,679

question

900

00:31:46,630 --> 00:31:45,679

requires a little more than just a

901  
00:31:48,310 --> 00:31:46,640  
sentence

902  
00:31:50,070 --> 00:31:48,320  
all right so i can see the first

903  
00:31:51,909 --> 00:31:50,080  
question here uh and the other one says

904  
00:31:53,669 --> 00:31:51,919  
i have the same question so the question

905  
00:31:55,990 --> 00:31:53,679  
was does the whisper algorithm require a

906  
00:31:57,590 --> 00:31:56,000  
continuously repeating signal to analyze

907  
00:31:59,590 --> 00:31:57,600  
the answer is no actually you can set it

908  
00:32:02,070 --> 00:31:59,600  
up to do it lots of different ways

909  
00:32:04,149 --> 00:32:02,080  
some people want to test their antenna

910  
00:32:06,310 --> 00:32:04,159  
and simply broadcast one whisper signal

911  
00:32:07,669 --> 00:32:06,320  
that's it and then they look and see who

912  
00:32:09,509 --> 00:32:07,679  
all around the world has spotted that

913  
00:32:10,789 --> 00:32:09,519

one transmission

914

00:32:13,509 --> 00:32:10,799

on the other hand i've been doing it

915

00:32:15,190 --> 00:32:13,519

every 10 minutes for the past

916

00:32:16,549 --> 00:32:15,200

a little over a year

917

00:32:18,070 --> 00:32:16,559

night and day

918

00:32:19,909 --> 00:32:18,080

except for things like thunderstorms

919

00:32:21,190 --> 00:32:19,919

when i have to turn off my equipment and

920

00:32:22,630 --> 00:32:21,200

the reason for that is because there are

921

00:32:24,149 --> 00:32:22,640

a lot of people who then can listen to

922

00:32:25,590 --> 00:32:24,159

me and know they've got a reliable

923

00:32:27,509 --> 00:32:25,600

signal so if they're testing their

924

00:32:29,029 --> 00:32:27,519

antennas they know that i'm there and

925

00:32:31,430 --> 00:32:29,039

i've got a continuous signal there are a

926  
00:32:32,950 --> 00:32:31,440  
number of people uh who are always on

927  
00:32:34,389 --> 00:32:32,960  
and then some were just on for a very

928  
00:32:35,990 --> 00:32:34,399  
small amount of time

929  
00:32:37,509 --> 00:32:36,000  
because of the noise

930  
00:32:40,310 --> 00:32:37,519  
there are issues of you may want to do

931  
00:32:42,149 --> 00:32:40,320  
some averaging in order to come up with

932  
00:32:43,669 --> 00:32:42,159  
good measurements and so just a single

933  
00:32:46,070 --> 00:32:43,679  
transmission isn't the greatest idea in

934  
00:32:47,350 --> 00:32:46,080  
the world uh and mine is every 10

935  
00:32:49,350 --> 00:32:47,360  
minutes which is kind of the default

936  
00:32:51,750 --> 00:32:49,360  
standard for whisper i did a little bit

937  
00:32:53,430 --> 00:32:51,760  
of stuff with it every two minutes

938  
00:32:56,630 --> 00:32:53,440

and the only trouble with that is it

939

00:32:59,269 --> 00:32:56,640

generates a huge amount of data and

940

00:33:01,830 --> 00:32:59,279

then also not as many people can use the

941

00:33:03,269 --> 00:33:01,840

channel at the same time uh so not very

942

00:33:04,710 --> 00:33:03,279

many people do it every two minutes so i

943

00:33:06,070 --> 00:33:04,720

did it for a

944

00:33:08,389 --> 00:33:06,080

couple of hours here and there to do

945

00:33:10,149 --> 00:33:08,399

some experiments but i decided to you

946

00:33:12,389 --> 00:33:10,159

know it would just annoy people if i did

947

00:33:14,789 --> 00:33:12,399

that too much but there's actually a

948

00:33:16,149 --> 00:33:14,799

whisper station over in norfolk knew

949

00:33:18,149 --> 00:33:16,159

where i am

950

00:33:19,350 --> 00:33:18,159

on the battleship wisconsin it's a uh

951  
00:33:21,669 --> 00:33:19,360  
it's a

952  
00:33:23,110 --> 00:33:21,679  
ship museum and they have an antique

953  
00:33:25,350 --> 00:33:23,120  
radio club there

954  
00:33:26,630 --> 00:33:25,360  
and they put a whisper transmitter as

955  
00:33:28,870 --> 00:33:26,640  
well as their world war ii type

956  
00:33:30,310 --> 00:33:28,880  
transmitters and

957  
00:33:32,230 --> 00:33:30,320  
for a while we're running that one 24

958  
00:33:33,590 --> 00:33:32,240  
hours a day but i think with covid they

959  
00:33:34,950 --> 00:33:33,600  
weren't able to get there to maintain

960  
00:33:37,590 --> 00:33:34,960  
the thing because it's a museum that was

961  
00:33:39,269 --> 00:33:37,600  
closed but at any rate um you can be

962  
00:33:40,789 --> 00:33:39,279  
very

963  
00:33:42,950 --> 00:33:40,799

flexible

964

00:33:44,630 --> 00:33:42,960

um i see that we have several more

965

00:33:46,470 --> 00:33:44,640

questions in the questions box we also

966

00:33:47,990 --> 00:33:46,480

have york dobbins who has raised his

967

00:33:51,190 --> 00:33:48,000

hand and would like to have the

968

00:33:52,870 --> 00:33:51,200

microphone if you uh are okay i will

969

00:33:54,630 --> 00:33:52,880

give the microphone to york we always

970

00:33:56,310 --> 00:33:54,640

like i know that york is co-author on

971

00:33:58,149 --> 00:33:56,320

one of the papers i cited so uh we

972

00:33:59,990 --> 00:33:58,159

introduced somebody today all right

973

00:34:01,750 --> 00:34:00,000

let's just see if this works here

974

00:34:03,269 --> 00:34:01,760

providing mike to york dolphins we'll

975

00:34:05,830 --> 00:34:03,279

see um

976  
00:34:09,430 --> 00:34:05,840  
the the whisper system obviously

977  
00:34:12,470 --> 00:34:09,440  
involves some form of

978  
00:34:13,589 --> 00:34:12,480  
fairly high-end data processing

979  
00:34:17,430 --> 00:34:13,599  
to

980  
00:34:18,829 --> 00:34:17,440  
extract these very weak signals from a

981  
00:34:20,790 --> 00:34:18,839  
strong noise

982  
00:34:24,470 --> 00:34:20,800  
background um

983  
00:34:29,270 --> 00:34:26,869  
applying the whisper algorithm or

984  
00:34:32,310 --> 00:34:29,280  
algorithms to

985  
00:34:33,829 --> 00:34:32,320  
directly to anomalies data

986  
00:34:36,710 --> 00:34:33,839  
this would of course have to be high

987  
00:34:39,349 --> 00:34:36,720  
volume anomalies data such as the

988  
00:34:42,629 --> 00:34:39,359

uh gcp or

989

00:34:44,869 --> 00:34:42,639

uh some of the uh stuff people have done

990

00:34:47,270 --> 00:34:44,879

with with very high speed

991

00:34:51,030 --> 00:34:47,280

uh reg devices

992

00:34:53,430 --> 00:34:51,040

but had you thought of looking at high

993

00:34:55,589 --> 00:34:53,440

volume anomalies data to see if you can

994

00:34:58,069 --> 00:34:55,599

find patterns in what mostly looks like

995

00:35:00,950 --> 00:34:58,079

random noise to see if there actually

996

00:35:03,349 --> 00:35:00,960

are structured signals buried in there

997

00:35:05,109 --> 00:35:03,359

that gets way beyond my expertise uh

998

00:35:06,790 --> 00:35:05,119

because i just use it but have no idea

999

00:35:08,470 --> 00:35:06,800

how it was actually programmed uh the

1000

00:35:10,069 --> 00:35:08,480

guy that actually did it is uh at

1001  
00:35:11,510 --> 00:35:10,079  
princeton uh near your old stomping

1002  
00:35:13,349 --> 00:35:11,520  
grounds uh

1003  
00:35:15,190 --> 00:35:13,359  
joe taylor in the physics department

1004  
00:35:16,630 --> 00:35:15,200  
there uh is the one who developed the

1005  
00:35:17,670 --> 00:35:16,640  
whisper algorithm with a number of his

1006  
00:35:19,349 --> 00:35:17,680  
colleagues

1007  
00:35:20,950 --> 00:35:19,359  
and i don't know if any of them might

1008  
00:35:22,550 --> 00:35:20,960  
have an interest in applying things one

1009  
00:35:25,270 --> 00:35:22,560  
of the problems with applying whisper to

1010  
00:35:27,430 --> 00:35:25,280  
some anomalies is it requires very uh

1011  
00:35:28,870 --> 00:35:27,440  
careful time synchronization although

1012  
00:35:30,950 --> 00:35:28,880  
they're developing ones that don't

1013  
00:35:32,310 --> 00:35:30,960

require time synchronization

1014

00:35:35,270 --> 00:35:32,320

it's hard to get time synchronization

1015

00:35:36,710 --> 00:35:35,280

with a lot of anomalous data but uh it's

1016

00:35:38,790 --> 00:35:36,720

a group based at princeton but they're

1017

00:35:40,710 --> 00:35:38,800

all over the country uh one of them is

1018

00:35:42,230 --> 00:35:40,720

out in i think university of illinois

1019

00:35:43,589 --> 00:35:42,240

and various other places in the country

1020

00:35:46,470 --> 00:35:43,599

that work as a team

1021

00:35:48,310 --> 00:35:46,480

and if you go to the whispernet site uh

1022

00:35:50,870 --> 00:35:48,320

it's got links to their pages i think

1023

00:35:52,310 --> 00:35:50,880

it's it's a physics page at princeton is

1024

00:35:53,990 --> 00:35:52,320

where joe taylor's site is but they've

1025

00:35:55,589 --> 00:35:54,000

got links to all the people doing the

1026

00:35:57,109 --> 00:35:55,599

whisper development

1027

00:36:00,150 --> 00:35:57,119

how it all works is a little bit beyond

1028

00:36:01,270 --> 00:36:00,160

me basically they use a lot of uh signal

1029

00:36:03,270 --> 00:36:01,280

processing

1030

00:36:05,190 --> 00:36:03,280

but it's not so complex that you can't

1031

00:36:07,589 --> 00:36:05,200

do it on a laptop

1032

00:36:12,150 --> 00:36:07,599

and then their software is all free for

1033

00:36:14,390 --> 00:36:12,160

just download it and start it up

1034

00:36:15,430 --> 00:36:14,400

all right thank you york

1035

00:36:17,109 --> 00:36:15,440

um

1036

00:36:18,790 --> 00:36:17,119

so the software itself the actual

1037

00:36:20,470 --> 00:36:18,800

algorithms that do the analyses are

1038

00:36:22,870 --> 00:36:20,480

running on your local machine this has

1039

00:36:26,470 --> 00:36:22,880

not been analyzed on a central server

1040

00:36:30,470 --> 00:36:26,480

and put uh up already processed

1041

00:36:32,069 --> 00:36:30,480

well both and so what happens is uh

1042

00:36:35,270 --> 00:36:32,079

i sit here with this screen right now

1043

00:36:36,870 --> 00:36:35,280

i've minimized my uh my screen in uh

1044

00:36:38,950 --> 00:36:36,880

uh i won't show it to everybody but

1045

00:36:41,430 --> 00:36:38,960

essentially while i'm running this

1046

00:36:43,670 --> 00:36:41,440

on the receiving side when i'm not

1047

00:36:46,150 --> 00:36:43,680

transmitting it's constantly displaying

1048

00:36:47,910 --> 00:36:46,160

everything i'm receiving and decoding

1049

00:36:49,990 --> 00:36:47,920

then every two minutes it uploads it to

1050

00:36:51,349 --> 00:36:50,000

the whispernet site on the internet so

1051

00:36:53,829 --> 00:36:51,359

if i want to look it on the internet i

1052

00:36:55,589 --> 00:36:53,839

can just log on to whispernet and see

1053

00:36:56,630 --> 00:36:55,599

who's received me and who i've received

1054

00:36:59,190 --> 00:36:56,640

but i'm seeing everybody that i've

1055

00:37:01,270 --> 00:36:59,200

received and decoded their signals in

1056

00:37:02,950 --> 00:37:01,280

real time just sitting here on my screen

1057

00:37:05,190 --> 00:37:02,960

so they've got processing within your

1058

00:37:06,870 --> 00:37:05,200

own computer but then um processing at

1059

00:37:08,390 --> 00:37:06,880

whispernet site and then several people

1060

00:37:10,230 --> 00:37:08,400

have got their own sites where they've

1061

00:37:12,470 --> 00:37:10,240

written algorithms to do other things so

1062

00:37:13,910 --> 00:37:12,480

a fellow in australia

1063

00:37:16,150 --> 00:37:13,920

wrote the program that does some of the

1064

00:37:17,990 --> 00:37:16,160

graphs and maps i was showing he takes

1065

00:37:19,670 --> 00:37:18,000

all the data and puts it into graphs and

1066

00:37:21,030 --> 00:37:19,680

maps and so you can download all of his

1067

00:37:23,190 --> 00:37:21,040

graphs and maps

1068

00:37:24,630 --> 00:37:23,200

so it's a big open source project with

1069

00:37:26,470 --> 00:37:24,640

people all over the world coming up with

1070

00:37:27,910 --> 00:37:26,480

clever things to do with it

1071

00:37:29,990 --> 00:37:27,920

terrific

1072

00:37:31,670 --> 00:37:30,000

um can you see the questions in the

1073

00:37:33,510 --> 00:37:31,680

questions box until we have several

1074

00:37:35,910 --> 00:37:33,520

right again they sort of scroll down so

1075

00:37:37,990 --> 00:37:35,920

let me scroll back up again

1076

00:37:39,990 --> 00:37:38,000

okay the first thing i see here

1077

00:37:42,550 --> 00:37:40,000

was do i see size potentially analogous

1078

00:37:44,870 --> 00:37:42,560

to whisper and separate from em signals

1079

00:37:46,470 --> 00:37:44,880

i have no idea uh

1080

00:37:48,470 --> 00:37:46,480

i don't think anybody knows what psy is

1081

00:37:49,750 --> 00:37:48,480

although

1082

00:37:51,750 --> 00:37:49,760

you'll certainly see a few people

1083

00:37:54,870 --> 00:37:51,760

playing with uh with physics to try to

1084

00:37:57,510 --> 00:37:54,880

figure it out um

1085

00:37:59,589 --> 00:37:57,520

who knows the interesting thing to me is

1086

00:38:02,150 --> 00:37:59,599

that whether it's electromagnetic or not

1087

00:38:03,109 --> 00:38:02,160

and i would say probably not

1088

00:38:05,750 --> 00:38:03,119

whatever

1089

00:38:08,069 --> 00:38:05,760

is going on seems to be affected by

1090

00:38:09,589 --> 00:38:08,079

electromagnetic phenomena now that may

1091

00:38:11,190 --> 00:38:09,599

just be because they affect humans not

1092

00:38:12,550 --> 00:38:11,200

necessarily psi

1093

00:38:14,069 --> 00:38:12,560

and so it looks like the same kind of

1094

00:38:16,069 --> 00:38:14,079

phenomena that affect psi maybe

1095

00:38:18,150 --> 00:38:16,079

affecting heart rate variability and

1096

00:38:19,670 --> 00:38:18,160

other physiological variables but

1097

00:38:21,829 --> 00:38:19,680

there's certainly a parallel there but

1098

00:38:23,910 --> 00:38:21,839

what's actually going on physically i

1099

00:38:25,030 --> 00:38:23,920

have the slightest idea i do know there

1100

00:38:26,630 --> 00:38:25,040

are some physicists who've been trying

1101  
00:38:28,790 --> 00:38:26,640  
to figure it out i'm not sure that they

1102  
00:38:30,310 --> 00:38:28,800  
know what's going on either

1103  
00:38:32,630 --> 00:38:30,320  
very hard to do

1104  
00:38:34,470 --> 00:38:32,640  
okay the next one for sci experiments

1105  
00:38:36,550 --> 00:38:34,480  
uh what frequency range do you look at

1106  
00:38:38,470 --> 00:38:36,560  
and what kind of signal well again for

1107  
00:38:40,310 --> 00:38:38,480  
what i'm doing it's not psi experiments

1108  
00:38:43,030 --> 00:38:40,320  
for any kind of experiment there is an

1109  
00:38:44,550 --> 00:38:43,040  
enormous range of frequencies uh

1110  
00:38:46,910 --> 00:38:44,560  
whisper is now being used in the ham

1111  
00:38:49,829 --> 00:38:46,920  
radio bands those range from

1112  
00:38:52,790 --> 00:38:49,839  
135 kilohertz which is a little bit

1113  
00:38:55,030 --> 00:38:52,800

above uh audio that you could hear a

1114

00:38:57,510 --> 00:38:55,040

very very low frequency radio band all

1115

00:38:58,710 --> 00:38:57,520

the way up to about 1.2 gigahertz which

1116

00:39:02,150 --> 00:38:58,720

is kind of up around where your cell

1117

00:39:03,589 --> 00:39:02,160

phone works and there are about 10 bands

1118

00:39:06,150 --> 00:39:03,599

in there i'm using one just about in the

1119

00:39:07,750 --> 00:39:06,160

middle called the 20 meter band uh the

1120

00:39:10,470 --> 00:39:07,760

main reason being i have an antenna for

1121

00:39:12,470 --> 00:39:10,480

it over my garage uh also it happens to

1122

00:39:13,670 --> 00:39:12,480

be a very good long distance band and

1123

00:39:15,990 --> 00:39:13,680

that's what i was interested in but

1124

00:39:17,589 --> 00:39:16,000

there are a wide variety of bands that

1125

00:39:20,710 --> 00:39:17,599

people are using and it all depends on

1126

00:39:22,950 --> 00:39:20,720

what your particular application is uh

1127

00:39:24,550 --> 00:39:22,960

and it doesn't require you even to use

1128

00:39:26,870 --> 00:39:24,560

ham radio bands if you're going to use

1129

00:39:28,790 --> 00:39:26,880

radio you need to use ham radio bands

1130

00:39:30,630 --> 00:39:28,800

but you know york was talking about

1131

00:39:31,990 --> 00:39:30,640

using it in some other thing directly on

1132

00:39:34,710 --> 00:39:32,000

anomalies and some people have done

1133

00:39:35,990 --> 00:39:34,720

things like modulated light waves and

1134

00:39:37,510 --> 00:39:36,000

received them across the street and

1135

00:39:39,829 --> 00:39:37,520

seeing how well it works

1136

00:39:41,430 --> 00:39:39,839

and so anything that you can put a

1137

00:39:43,109 --> 00:39:41,440

signal on because potentially you can

1138

00:39:45,109 --> 00:39:43,119

use whisper to decode the signal in very

1139

00:39:46,950 --> 00:39:45,119

high noise environments so you know lots

1140

00:39:48,069 --> 00:39:46,960

of possible abilities

1141

00:39:49,190 --> 00:39:48,079

um

1142

00:39:50,470 --> 00:39:49,200

okay

1143

00:39:51,750 --> 00:39:50,480

next one was if the signal is not

1144

00:39:53,430 --> 00:39:51,760

repeating that would require the noise

1145

00:39:54,950 --> 00:39:53,440

figures to be extremely consistent to

1146

00:39:57,190 --> 00:39:54,960

make any deviation for the noise figure

1147

00:39:59,829 --> 00:39:57,200

to be identified

1148

00:40:02,069 --> 00:39:59,839

the way it works is that each block is

1149

00:40:04,309 --> 00:40:02,079

two minutes long and has a huge amount

1150

00:40:08,470 --> 00:40:04,319

of redundancy in that two minutes

1151  
00:40:10,069 --> 00:40:08,480  
and that's how they extract the signal

1152  
00:40:12,470 --> 00:40:10,079  
if that isn't good enough again you can

1153  
00:40:15,030 --> 00:40:12,480  
do multiple whisper transmissions and so

1154  
00:40:17,910 --> 00:40:15,040  
a lot depends on uh how much noise

1155  
00:40:19,589 --> 00:40:17,920  
you've got and how precise you want your

1156  
00:40:21,510 --> 00:40:19,599  
answer um

1157  
00:40:23,750 --> 00:40:21,520  
but the actual blocks that are used in

1158  
00:40:25,589 --> 00:40:23,760  
the whisper signal are two minutes full

1159  
00:40:27,910 --> 00:40:25,599  
of very very redundant forward error

1160  
00:40:29,430 --> 00:40:27,920  
correction

1161  
00:40:30,630 --> 00:40:29,440  
okay and then

1162  
00:40:31,910 --> 00:40:30,640  
next one was

1163  
00:40:33,589 --> 00:40:31,920

does this process apply only to

1164

00:40:35,349 --> 00:40:33,599

electromagnetic signals or magnetic and

1165

00:40:37,349 --> 00:40:35,359

or electric

1166

00:40:39,750 --> 00:40:37,359

any kind of signal at all including

1167

00:40:42,150 --> 00:40:39,760

light including sound again it was

1168

00:40:43,750 --> 00:40:42,160

intended for use with ham radio bands

1169

00:40:45,910 --> 00:40:43,760

but people have tried all sorts of other

1170

00:40:47,670 --> 00:40:45,920

applications uh you could even use it

1171

00:40:49,750 --> 00:40:47,680

say at a rock concert slip a whisper

1172

00:40:51,750 --> 00:40:49,760

signal in and detect it you know six

1173

00:40:53,910 --> 00:40:51,760

blocks away in somebody's house to the

1174

00:40:55,510 --> 00:40:53,920

microphone if you wanted to it should

1175

00:40:57,990 --> 00:40:55,520

work uh

1176

00:40:59,190 --> 00:40:58,000

and actually it was originally the

1177

00:40:59,990 --> 00:40:59,200

original

1178

00:41:02,069 --> 00:41:00,000

thing

1179

00:41:05,349 --> 00:41:02,079

that joe taylor designed is from moon

1180

00:41:06,870 --> 00:41:05,359

bounce which is incredibly uh noisy low

1181

00:41:08,790 --> 00:41:06,880

signal send a radio signal up to the

1182

00:41:10,950 --> 00:41:08,800

moon and bounce it off and everybody

1183

00:41:12,710 --> 00:41:10,960

started using it for regular ham radio

1184

00:41:14,150 --> 00:41:12,720

and so uh he and some other people

1185

00:41:15,910 --> 00:41:14,160

rewrote the algorithm to make it more

1186

00:41:17,190 --> 00:41:15,920

useful for ham radio they still have one

1187

00:41:19,670 --> 00:41:17,200

for moon bounce so they keep playing

1188

00:41:20,790 --> 00:41:19,680

with different kinds of uh

1189

00:41:22,470 --> 00:41:20,800

um

1190

00:41:25,030 --> 00:41:22,480

next one was so there's no sync signal

1191

00:41:27,190 --> 00:41:25,040

only time dependent um it's time

1192

00:41:31,030 --> 00:41:27,200

dependent and the way whisper runs it

1193

00:41:32,630 --> 00:41:31,040

has to be um synchronized to uh

1194

00:41:34,870 --> 00:41:32,640

universal time

1195

00:41:36,550 --> 00:41:34,880

and typically you use the nist computer

1196

00:41:38,309 --> 00:41:36,560

server uh

1197

00:41:39,910 --> 00:41:38,319

once you've got it synchronized if

1198

00:41:41,349 --> 00:41:39,920

you've got a good enough clock you can

1199

00:41:43,750 --> 00:41:41,359

just keep it synchronized for a long

1200

00:41:45,349 --> 00:41:43,760

time some people use gps to synchronize

1201

00:41:47,589 --> 00:41:45,359

the time but it does have to be time

1202

00:41:49,670 --> 00:41:47,599

synchronized however they're working on

1203

00:41:51,829 --> 00:41:49,680

algorithms and they already may have one

1204

00:41:53,829 --> 00:41:51,839

for some of this digital stuff without

1205

00:41:55,109 --> 00:41:53,839

any time synchronization but that's not

1206

00:41:56,390 --> 00:41:55,119

the way whisper works right at this

1207

00:41:58,309 --> 00:41:56,400

point

1208

00:42:00,829 --> 00:41:58,319

uh

1209

00:42:03,270 --> 00:42:00,839

then question where can i download your

1210

00:42:05,750 --> 00:42:03,280

citations uh they were on that last

1211

00:42:08,630 --> 00:42:05,760

slide and i think mark you there this

1212

00:42:10,870 --> 00:42:08,640

whole thing will be posted somewhere

1213

00:42:12,230 --> 00:42:10,880

my understanding yes i'm not sure about

1214

00:42:14,870 --> 00:42:12,240

the q and a

1215

00:42:16,630 --> 00:42:14,880

um but if but the slide the slide will

1216

00:42:20,150 --> 00:42:16,640

be on the recording

1217

00:42:22,069 --> 00:42:20,160

so you can just watch the end of the

1218

00:42:23,510 --> 00:42:22,079

recording um

1219

00:42:24,710 --> 00:42:23,520

and we're on the ssc side i guess

1220

00:42:26,630 --> 00:42:24,720

annalisa

1221

00:42:29,510 --> 00:42:26,640

and would you be receptive to people

1222

00:42:32,710 --> 00:42:29,520

emailing you uh and requesting that

1223

00:42:35,309 --> 00:42:32,720

um sure i'd be happy to to send it to uh

1224

00:42:37,109 --> 00:42:35,319

anybody who wants it uh my email is

1225

00:42:39,750 --> 00:42:37,119

doug.richards

1226

00:42:42,069 --> 00:42:39,760

cox.net

1227

00:42:43,750 --> 00:42:42,079

terrific i see some more

1228

00:42:45,190 --> 00:42:43,760

questions somebody somebody

1229

00:42:46,069 --> 00:42:45,200

screenshotted the citations that works

1230

00:42:47,109 --> 00:42:46,079

yep

1231

00:42:49,510 --> 00:42:47,119

um

1232

00:42:51,829 --> 00:42:49,520

okay next one was are you analyzing a cw

1233

00:42:53,030 --> 00:42:51,839

signal or some kind of modulated rf

1234

00:42:55,349 --> 00:42:53,040

that's for people who understand what

1235

00:42:58,550 --> 00:42:55,359

this is all about and the answer is uh

1236

00:43:01,349 --> 00:42:58,560

the way it works is that it is a set of

1237

00:43:04,390 --> 00:43:01,359

uh i believe four tones

1238

00:43:06,470 --> 00:43:04,400

that are uh amplitude modulated and have

1239

00:43:07,670 --> 00:43:06,480

a very very narrow bandwidth

1240

00:43:09,589 --> 00:43:07,680

and so

1241

00:43:10,829 --> 00:43:09,599

the bandwidth is on the order of just a

1242

00:43:12,630 --> 00:43:10,839

few hertz

1243

00:43:15,109 --> 00:43:12,640

and uh

1244

00:43:17,190 --> 00:43:15,119

it's just a set of four tones so it's

1245

00:43:19,510 --> 00:43:17,200

basically a frequency shift keying

1246

00:43:21,589 --> 00:43:19,520

modulation with four tones and the

1247

00:43:23,349 --> 00:43:21,599

whisper website has all the technical

1248

00:43:25,510 --> 00:43:23,359

data on how the algorithm actually works

1249

00:43:27,589 --> 00:43:25,520

but i think that's what it is they have

1250

00:43:28,790 --> 00:43:27,599

a number of different kinds of encoding

1251  
00:43:31,109 --> 00:43:28,800  
for a number of different kinds of

1252  
00:43:34,230 --> 00:43:31,119  
digital ways of talking so for example

1253  
00:43:37,510 --> 00:43:34,240  
ft8 uses eight tones uh

1254  
00:43:40,230 --> 00:43:37,520  
jt65 uses 65 tones i think whisper uses

1255  
00:43:41,990 --> 00:43:40,240  
four but they're just uh audio modulated

1256  
00:43:43,270 --> 00:43:42,000  
tones and the reason for that is that

1257  
00:43:45,349 --> 00:43:43,280  
you can use the sound card in your

1258  
00:43:47,670 --> 00:43:45,359  
computer to decode all this stuff

1259  
00:43:50,069 --> 00:43:47,680  
uh you simply use the sound card plugged

1260  
00:43:52,069 --> 00:43:50,079  
into your receiver and some people who

1261  
00:43:53,270 --> 00:43:52,079  
don't have very fancy equipment actually

1262  
00:43:54,630 --> 00:43:53,280  
hold the microphone for their

1263  
00:43:57,670 --> 00:43:54,640

transmitter up to the speaker in their

1264

00:43:59,750 --> 00:43:57,680

computer in order for it to work um you

1265

00:44:01,430 --> 00:43:59,760

know your baby crying and your cat

1266

00:44:03,430 --> 00:44:01,440

meowing will interfere with that but i

1267

00:44:05,349 --> 00:44:03,440

i've seen people doing it on youtube and

1268

00:44:07,910 --> 00:44:05,359

it works it's just kind of a pain

1269

00:44:09,270 --> 00:44:07,920

mine plugs into the computer but that's

1270

00:44:12,870 --> 00:44:09,280

why all these things are audio tone

1271

00:44:15,670 --> 00:44:14,470

uh

1272

00:44:17,430 --> 00:44:15,680

and what were the audio signals you

1273

00:44:19,750 --> 00:44:17,440

heard from mars a few days ago having a

1274

00:44:22,150 --> 00:44:19,760

clue uh

1275

00:44:25,270 --> 00:44:22,160

i i believe they were actually believed

1276  
00:44:27,589 --> 00:44:25,280  
to be martian wind over the microphone

1277  
00:44:29,910 --> 00:44:27,599  
ah okay now interesting thing you may

1278  
00:44:31,910 --> 00:44:29,920  
wonder how do singles get from mars to

1279  
00:44:33,510 --> 00:44:31,920  
here and the answer is for their video

1280  
00:44:36,470 --> 00:44:33,520  
and audio they're using very similar

1281  
00:44:38,150 --> 00:44:36,480  
kinds of algorithms uh in order to take

1282  
00:44:39,510 --> 00:44:38,160  
extremely weak signals and pick them up

1283  
00:44:41,829 --> 00:44:39,520  
and turn them into nice pictures and

1284  
00:44:43,030 --> 00:44:41,839  
sound down here so there's a lot of

1285  
00:44:45,589 --> 00:44:43,040  
people are doing this kind of signal

1286  
00:44:47,030 --> 00:44:45,599  
processing for all sorts of things uh

1287  
00:44:48,550 --> 00:44:47,040  
and this just happened to apply to

1288  
00:44:52,230 --> 00:44:48,560

something that anybody can do with their

1289

00:44:57,270 --> 00:44:54,309

all right let's see i'm looking i don't

1290

00:44:59,190 --> 00:44:57,280

see any more questions or raised hands

1291

00:45:01,270 --> 00:44:59,200

just popped up

1292

00:45:03,510 --> 00:45:01,280

oh there you go

1293

00:45:05,670 --> 00:45:03,520

okay so does it have a limit on how low

1294

00:45:07,109 --> 00:45:05,680

the signal is with respect to the noise

1295

00:45:10,390 --> 00:45:07,119

yes uh

1296

00:45:13,190 --> 00:45:10,400

for whisper it's negative 31 db related

1297

00:45:15,670 --> 00:45:13,200

to the noise in uh

1298

00:45:16,870 --> 00:45:15,680

a band around the signal and for more

1299

00:45:18,790 --> 00:45:16,880

specifics you'd have to go to the

1300

00:45:20,309 --> 00:45:18,800

whisper site and see exactly how the

1301

00:45:22,390 --> 00:45:20,319

algorithm works

1302

00:45:23,750 --> 00:45:22,400

but uh they've got several different

1303

00:45:24,870 --> 00:45:23,760

kinds of signal processing with

1304

00:45:28,710 --> 00:45:24,880

different

1305

00:45:30,950 --> 00:45:28,720

noise thresholds but it's negative 31db

1306

00:45:32,710 --> 00:45:30,960

as far as the size signal no one even

1307

00:45:33,990 --> 00:45:32,720

knows a psi is a signal

1308

00:45:35,990 --> 00:45:34,000

that's one of the problems we really

1309

00:45:37,750 --> 00:45:36,000

don't know what's going on with psy

1310

00:45:39,349 --> 00:45:37,760

and how we'd apply the algorithm to it

1311

00:45:41,190 --> 00:45:39,359

so again york had an interesting

1312

00:45:43,190 --> 00:45:41,200

question that i have no good answer to

1313

00:45:44,470 --> 00:45:43,200

uh

1314

00:45:45,750 --> 00:45:44,480

you know it

1315

00:45:47,430 --> 00:45:45,760

it's something that no one really knows

1316

00:45:48,790 --> 00:45:47,440

but certainly trying some of these

1317

00:45:50,790 --> 00:45:48,800

signal processing things with these

1318

00:45:52,309 --> 00:45:50,800

sorts of weak signals that or

1319

00:45:54,309 --> 00:45:52,319

or roger nelson's random number

1320

00:45:56,150 --> 00:45:54,319

generators is certainly worth a shot and

1321

00:45:58,829 --> 00:45:56,160

see what what comes up there might be a

1322

00:46:05,829 --> 00:46:01,109

that terrific

1323

00:46:10,069 --> 00:46:08,309

questions

1324

00:46:12,390 --> 00:46:10,079

all right so um

1325

00:46:14,550 --> 00:46:12,400

thank you very much uh

1326

00:46:16,550 --> 00:46:14,560

for everyone give you a virtual round of