

Uganda Livestock Model

This document is used to produce some tables from the Uganda livestock test model output. The tables can be compared with other model revisions.

Human Sanitation Attribution

Print the attribution of sanitation types to the surface water emissions.

```
fpath <- testthat::test_path("output/uga_livestock/human_sources_water_crypto_uga.csv")
df_human_attribution <- read.csv(fpath)
n_digits <- 5
df_print <- df_human_attribution %>%
  dplyr::mutate_if(is.numeric, format, digits = n_digits, scientific = TRUE) %>%
  dplyr::rename_with(~ stringr::str_trunc(.x, 10))
df_print %>% dplyr::select(iso, 2:8)
```

iso	bucketL...	compost...	contain...	flushOpen	flushPit	flushSe...	flushSewer
800	2.3622e+13	5.4187e+12	0	1.4735e+13	4.3119e+13	6.9398e+13	1.5009e+14

```
df_print %>% dplyr::select(iso, 9:14)
```

iso	flushUn...	hanging...	openDef...	other	pitNoSlab	pitSlab
800	4.4205e+13	4.7244e+13	2.0018e+15	2.3622e+14	5.4371e+15	1.0926e+15

Livestock Attribution

Print the attribution of livestock types to the surface water emissions.

```
fpath <- testthat::test_path("output/uga_livestock/livestock_sources_water_crypto_uga.csv")
df_livestock_attribution <- read.csv(fpath)
df_print <- df_livestock_attribution %>%
  dplyr::mutate_if(is.numeric, format, digits = n_digits, scientific = TRUE)
df_print %>% dplyr::select(iso, 2:6)
```

iso	asses	buffaloes	camels	cattle	goats
800	1.2082e+15	0	7.5169e+14	2.9005e+19	5.4526e+18

```
df_print %>% dplyr::select(iso, 7:11)
```

iso	horses	mules	pigs	poultry	sheep
800	3.1775e+11	0	1.0654e+18	2.3874e+18	2.6995e+17

Surface Water Pathways

Print the attribution from various pathways to the surface water emissions.

```
fpath <- testthat::test_path("output", "uga_livestock", "surface_water_emissions_crypto_uga.csv")
df_pathways_water <- read.csv(fpath)
df_pathways_water %>%
  dplyr::mutate_if(is.numeric, format, digits = n_digits, scientific = TRUE)
```

iso	humans	land	wwtp
800	9.0791e+15	3.8182e+19	6.8132e+13

Land Pathways

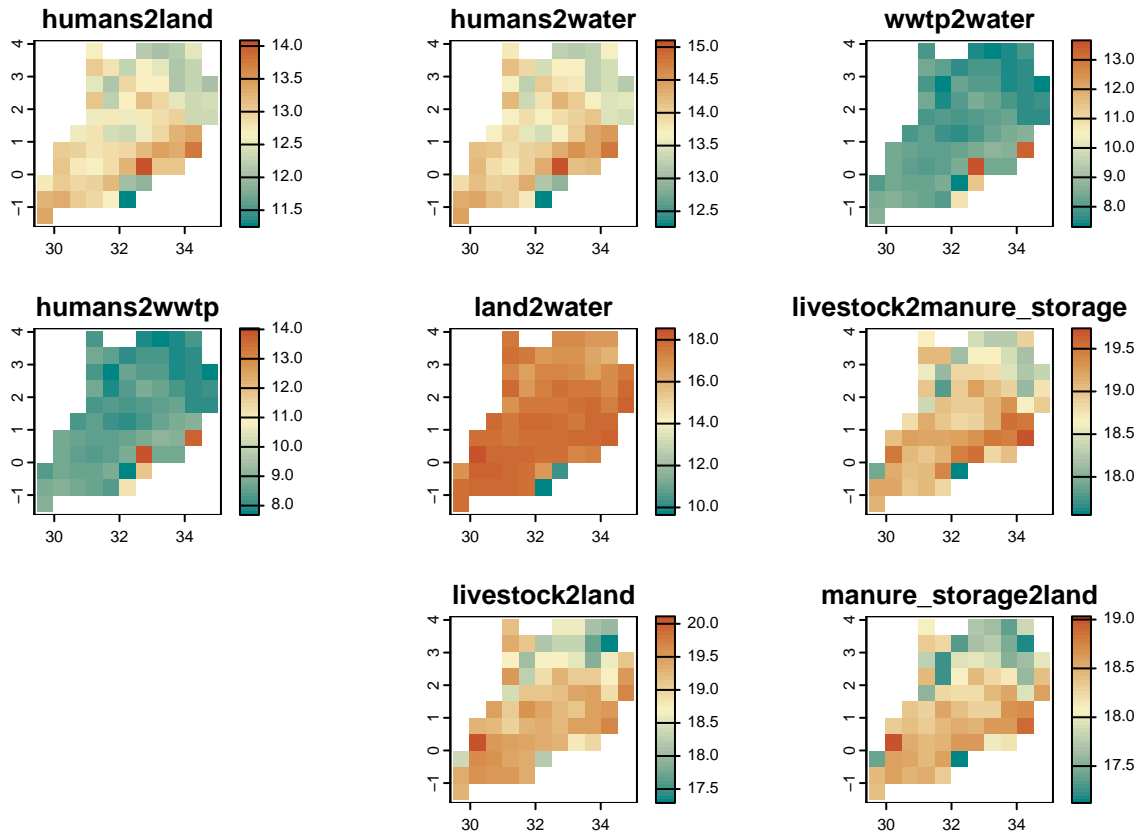
Print the attribution from various pathways to land emissions.

```
fpath <- testthat::test_path("output", "uga_livestock", "land_emissions_crypto_uga.csv")
df_pathways_land <- read.csv(fpath)
df_pathways_land %>%
  dplyr::mutate_if(is.numeric, format, digits = n_digits, scientific = TRUE)
```

iso	humans	livestock	manure_storage
800	7.2905e+14	1.364e+21	1.6328e+20

Maps

```
fpath <- testthat::test_path("output", "uga_livestock", "pathways.tif")
rast_pathways <- terra::rast(fpath)
terra::plot(log10(rast_pathways), col = hcl.colors(50, palette = "Geyser"), buffer = TRUE)
```



Compare Gridded vs Tabular

```
rast_zones <-
  terra::rast(system.file("extdata/uga_livestock/isoraster_uga.tif", package =
    "glowpa"))
zonal_sums <- terra::zonal(rast_pathways, rast_zones, fun = "sum", na.rm = TRUE)
zonal_sums %>% dplyr::mutate_if(is.numeric, format, digits = n_digits, scientific = TRUE) %>%
  dplyr::select(dplyr::contains(c("livestock", "manure")))
```

livestock2manure_storage	livestock2other	livestock2land	manure_storage2land
8.4036e+20	NaN	1.364e+21	1.6328e+20

```
fpath <-
  testthat::test_path("output/uga_livestock/land_emissions_crypto_uga.csv")
df_land <- read.csv(fpath)
df_land %>%
  dplyr::mutate_if(is.numeric, format, digits = n_digits, scientific = TRUE)
```

iso	humans	livestock	manure_storage
800	7.2905e+14	1.364e+21	1.6328e+20