model predict

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```r
beta.res.plot = NULL
for (i in 6164:10000) {
    B.res = MCMC.res.2$B[[i]]
    B.res = as.data.frame(B.res)
    B.res = colMeans(B.res)
    beta.res.plot = rbind(beta.res.plot, B.res)
}
sigma.res.plot = NULL
for (i in 6164:10000) {
    sigma.res = MCMC.res.2$sigma2[[i]]
    sigma.res = as.data.frame(sigma.res)
    sigma.res.plot = rbind(sigma.res.plot, sigma.res)
}
```

```r
dt_res = dt_test_id %>%
  dplyr::select(Wind.kt,intercept,Wind_prev,Lat_change, Long_change, Wind_change,ID) %>%
  mutate(beta_0 = beta.res.plot[,1],
         beta_1 = beta.res.plot[,2],
         beta_2 = beta.res.plot[,3],
         beta_3 = beta.res.plot[,4],
         beta_4 = beta.res.plot[,5],
         sigma = sigma.res.plot[,1]) %>%
  mutate(Wind_kt_pred = beta_0*intercept+beta_1*Wind_prev
         +beta_2*Lat_change+beta_3*Long_change+beta_4*Wind_change) %>%
  group_by(ID) %>%
  mutate(r_square = 1-(sum((Wind_kt_pred-Wind.kt)^2))/(sum((Wind.kt-mean(Wind.kt))^2)),
         rmse = rmse(Wind.kt,Wind_kt_pred))
```

```r
  dt_rmse=
  dt_res %>%
  dplyr::select(ID, r_square, rmse) %>%
  distinct() %>%
  mutate(r_square = round(r_square, 3),
         rmse = round(rmse,3)) %>%
  filter(r_square > 0 && r_square < 1)
head(dt_rmse,20) %>% knitr::kable()
```

ID	r_square	rmse
ABLE.1950	0.980	3.727
BAKER.1950	0.942	5.000
CHARLIE.1950	0.955	3.989
DOG.1950	0.957	5.000
EASY.1950	0.966	4.629

ID	r_square	rmse
FOX.1950	0.984	3.273
GEORGE.1950	0.993	1.768
ITEM.1950	0.889	5.000
JIG.1950	0.910	5.477
KING.1950	0.940	7.416
MIKE.1950	0.778	3.536
ABLE.1951	0.940	4.629
CHARLIE.1951	0.884	10.540
DOG.1951	0.947	5.000
FOX.1951	0.969	4.083
EASY.1951	0.974	4.677
HOW.1951	0.985	3.062
ITEM.1951	0.714	5.000
JIG.1951	0.137	13.694
ABLE.1952	0.968	3.535

```r
dt_res %>% filter(ID %in% c("DOG.1950","MITCH.1998","GINGER.1971","MARILYN.1995")) %>%
  mutate(index = 1:n()) %>%
  ggplot(aes(y = Wind.kt, x = index))+
  geom_line(aes(color = "Actual Wind Speed"))+
  geom_line(aes(y = Wind_kt_pred, color = "Predicted Wind Speed"))+
  facet_wrap(.~ID, nrow = 2, scales = "free")+
  theme_classic()+
  labs(x = "Index",
       y = "Wind Speed",
       title = "Actual Wind Speed vs. Predicted Wind Speed")
```

Actual Wind Speed vs. Predicted Wind Speed